Service Manual

PCM Digital Ensemble

SX-PR270

(M), (MC), (XM), (EN), (EH), (EF), (EZ), (EW), (EA),
(EP), (EK), (XL), (XR), (XS), (XD), (X), (XT)

AREAS

(M):	U.S.A.	(EK):	the United Kingdom
(MC):	Canada	(XL):	New Zealand
(XM):	Mexico	(XR):	Australia
(EN):	Norway, Sweden, Denmark, Finland	(XS):	Malaysia, Singapore, South Africa
(EH):	Holland	(XD):	Saudi Arabia, Kuwait
(EF):	France, Italy, Belgium	(X):	the Middle East, Indonesia, Hong Kong, the Philippines, Thailand,
(EZ):	Germany		
(EW):	Switzerland		
(EA):	Austria		
(EP):	Spain, Portugal, Greece	(XT):	Taiwan

■ Specifications

KEYBOARD		88 KEYS
SOUND GENERATOR		PCM
MAXIMUM NUMBER OF NOTES PRODUCED SIMULTANEOUSLY		32~16 NOTES
SOUND SELECT	PIANO	GRAND PIANO, UPRIGHT PIANO, E PIANO 1, E PIANO 2
		ROCK PIANO, HARPSI/HAWAII GTR, GUITAR, ELECTR GUITAR, MALLET, SPECIAL PERC, BRASS 1, BRASS 2, TRUMPET, SAX, REED, FLUTE/OBOE, ORGAN, STRINGS, SYNTH, ACOUSTIC BASS, ELECTRIC BASS, SPECIAL BASS (WITH 2 VARIATIONS FOR EACH SOUND)
KEY SPLIT		○ (G2, C3, C4)
PEDAL		SUSTAIN, SOSTENUTO, SOFT
EFFECT		○
DIGITAL REVERB		○ (ROOM, STAGE, HALL)
TRANSPOSE		○ (G~C~F♯)
RHYTHM	RHYTHM SELECT	MARCH, COUNTRY, WALTZ, BIG BAND, JAZZ COMBO, JAZZ BALLAD, TRAD JAZZ, JAZZ WALTZ, LATIN 1, LATIN 2, 8 BEAT 1, 8 BEAT 2, ROCK'N'ROLL, SHUFFLE, ROCK BALLAD, 16 BEAT 1, 16 BEAT 2, JAZZ ROCK, DISCO, LATIN ROCK (WITH 3 VARIATIONS FOR EACH SOUND)
	CONTROL	START/STOP, SYNCHRO START, COUNT & FILL IN, INTRO & ENDING, TEMPO
	KEYBOARD PERCUSSION	44 KEYS
METRONOME		○ (1, 2)
ONE TOUCH PLAY/ MUSIC STYLE SELECT		○
AUTO PLAY CHORD		BASIC SPLIT, ADVANCED SPLIT, PIANIST, ACCOMP PART 1, 2, 3
DYNAMIC ACCOMP		○
PANEL MEMORY		SET, 1~6
SEQUENCER		STORAGE CAPACITY: APPROX 7400 NOTES, 8 PARTS (RIGHT, LEFT, BASS, ACCOMP/CHORD 1, ACCOMP 2, 3, DRUMS, CONTROL) INPUT MODES: REAL TIME, STEP (CHORD ONLY) EDIT FUNCTIONS: TRACK CLEAR, SONG CLEAR
COMPOSER		STORAGE CAPACITY: APPROX 1300 NOTES, 5 PARTS (BASS, ACCOMP 1, 2, 3, DRUMS), MEMORY: 1~8 EDIT FUNCTIONS: COMPOSER CLEAR, BEAT, QUANTIZE, PERC ERASE (DRUMS ONLY)
DISPLAY		○
DEMO		○
CONTROL		MAIN VOLUME, BALANCE, TRANSPOSE/PROGRAM
TUNING		○
MIDI		CHANNEL, OCTAVE SHIFT, LOCAL CONTROL, P. MEM P-CHANGE, START/STOP, MIDI CLOCK, SONG SELECT, MIDI LOAD, INPUT MODE, P. CHANGE MODE, NOTE ONLY, MIDI OUT, EXT. SEQ. MODE, PITCH BEND RANGE
OTHERS		OCTAVE SHIFT, REVERB DEPTH, ACCOMP VOLUME, PIANO TUNING, TOUCH SENSITIVITY, PEDAL SETTING, P. MEM EXPAND, MIN RANGE, MEDLEY, DISK FORMAT, INITIAL

Technics

EXTERNAL MEMORY	DIGITAL DISK RECORDER
TERMINALS	HEADPHONE TERMINALS × 2, LINE OUT, AUX IN, MIDI (IN, THRU, OUT)
OUTPUT	50 W × 2
SPEAKERS	16 cm × 2, 6.5 cm × 2, MONITOR SPEAKER × 2
POWER REQUIREMENT	275 W, 290 VA (CANADA), 195 W (U.S.A. AND MEXICO)
	AC120/220/240 V 50/60 Hz AC120 V 60 Hz (NORTH AMERICA AND MEXICO) AC230 V 50/60 Hz (NEW ZEALAND AND EUROPE EXCEPT FOR UNITED KINGDOM)
DIMENSIONS (W×H×D)	143.3 cm × 101.7 cm × 59.3 cm (56-13/32" × 40-1/32"× 23-11/32")
NET WEIGHT	73 kg (160.9 lbs.)
ACCESSORIES	STAND, AC CORD

* Specifications are suject to change without notice for further improvement.

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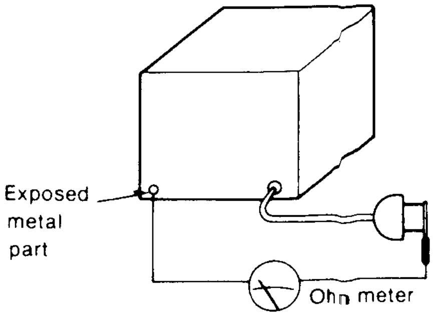
SAFETY PRECAUTION (This "safety precaution" is for the U.S.A. only)

• Safety Precaution

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only the manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

• Insulation Resistance Test

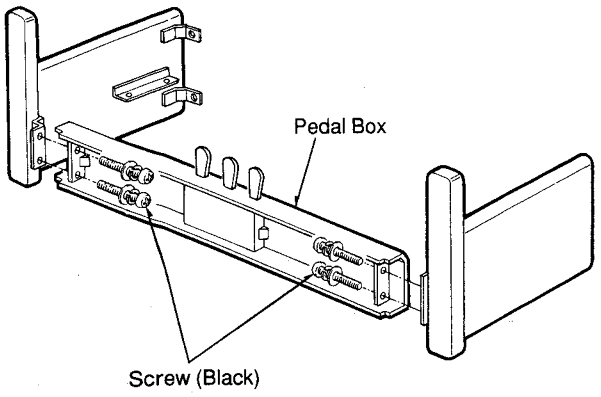
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screw heads, connectors, control shafts, handle brackets, etc. Measurements should range from 4 MΩ to infinity for all exposed parts.



Resistance = 4 MΩ to ∞

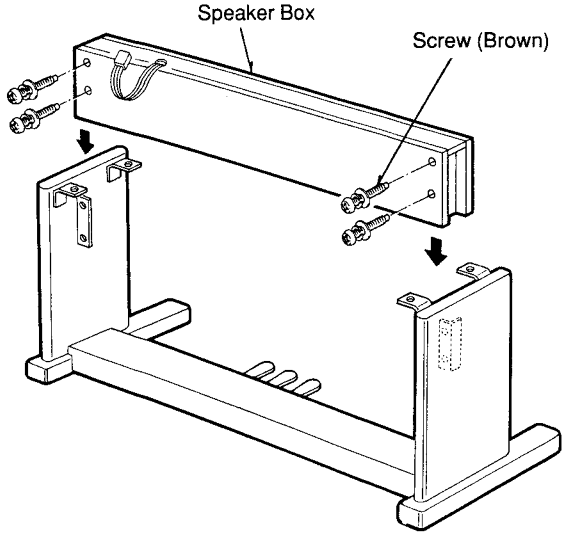
HOW TO ASSEMBLE THE PIANO

1 Assemble the side panels and the pedal box using the 4 black screws.


Pedal Box
Screw (Black)

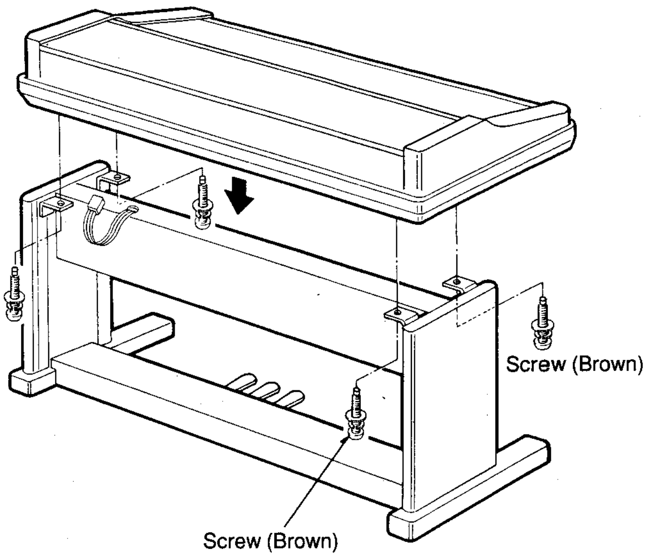
[Fig. 1]

2 Place the stand upright and mount the speaker box onto the L-shaped brackets with 4 brown screws.


Speaker Box
Screw (Brown)

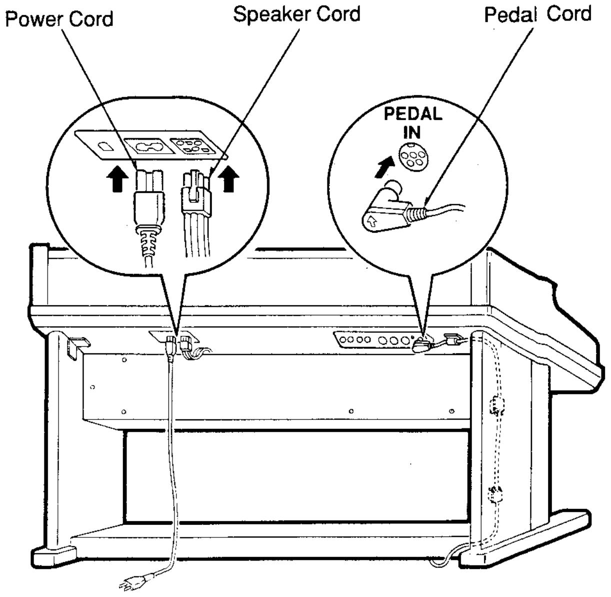
[Fig. 2]

3 Place the piano unit on the stand and secure it to the stand with 4 brown screws.


Screw (Brown)
Screw (Brown)

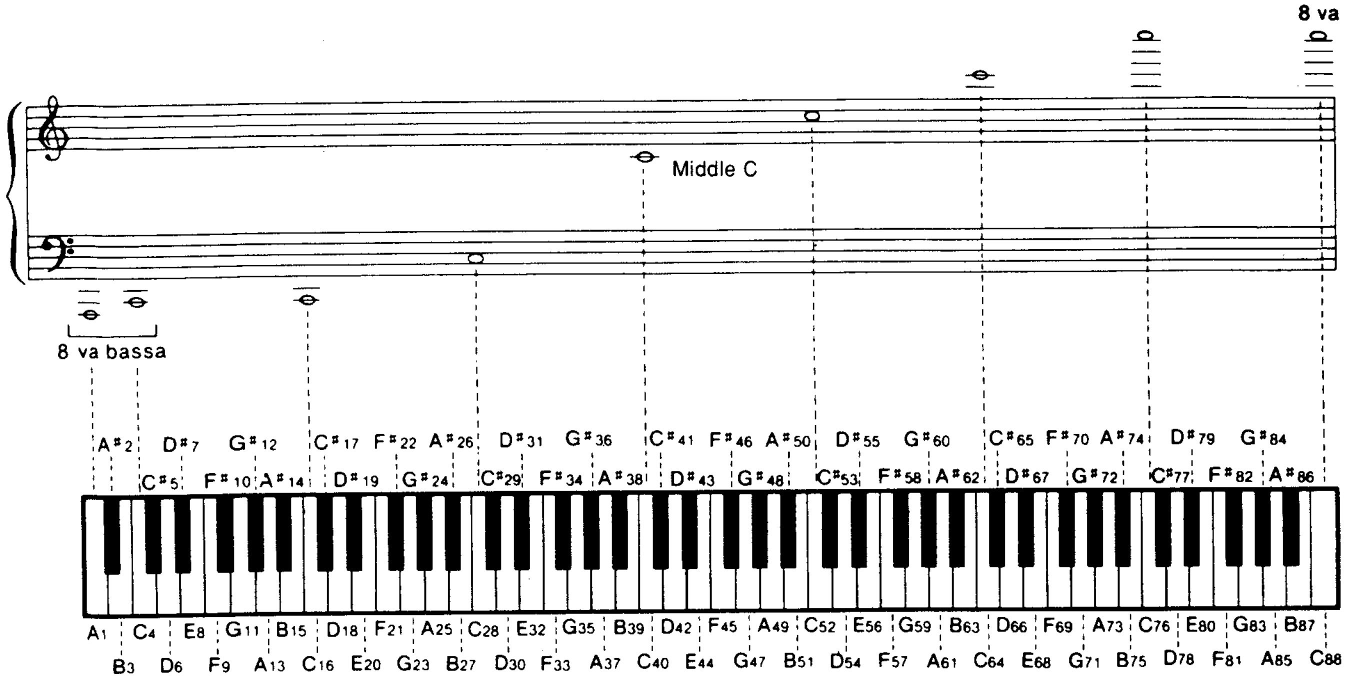
[Fig. 3]

4 Connect the pedal cord and speaker cord to their respective sockets located on the rear of the piano unit as shown below.

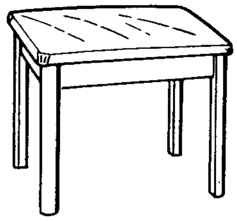

Power Cord
Speaker Cord
Pedal Cord
PEDAL IN

[Fig. 4]

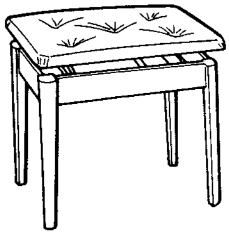
KEYBOARD RANGES


8 va
Middle C
8 va bassa
A#2 D#7 G#12 C#17 F#22 A#26 D#31 G#36 C#41 F#46 A#50 D#55 G#60 C#65 F#70 A#74 D#79 G#84
C#5 F#10 A#14 D#19 G#24 C#29 F#34 A#38 D#43 G#48 C#53 F#58 A#62 D#67 G#72 C#77 F#82 A#86
A1 C4 E8 G11 B15 D18 F21 A25 C28 E32 G35 B39 D42 F45 A49 C52 E56 G59 B63 D66 F69 A73 C76 E80 G83 B87
B3 D6 F9 A13 C16 E20 G23 B27 D30 F33 A37 C40 E44 G47 B51 D54 F57 A61 C64 E68 G71 B75 D78 F81 A85 C88

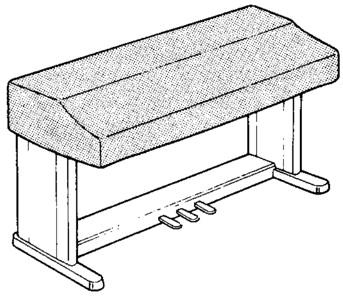
OPTIONS



SZ-CP3M
Bench

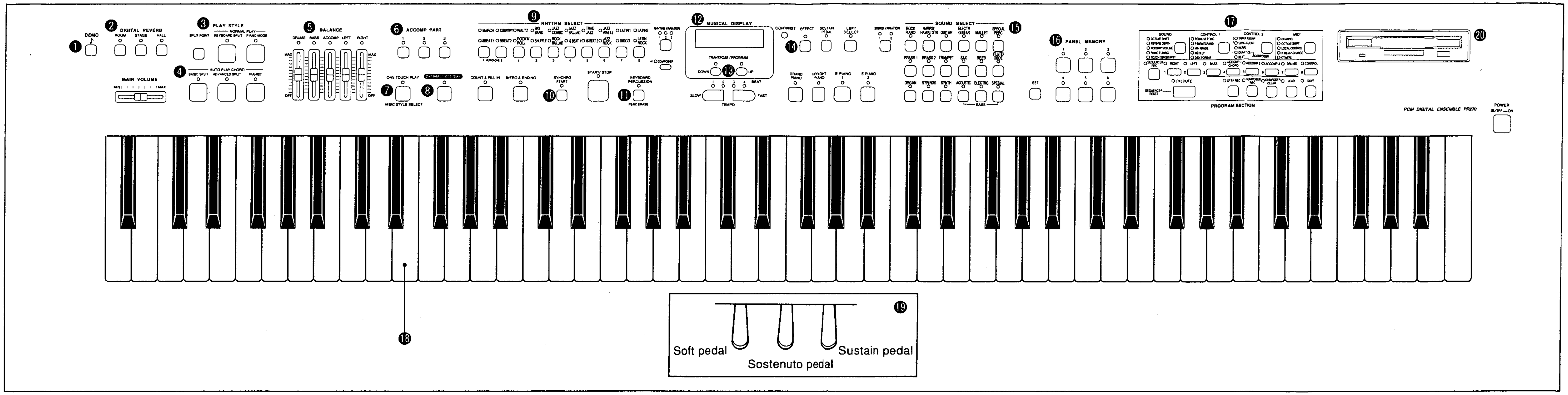


SZ-CP4M
Bench



SZ-DC4
Dust Cover

ARRANGEMENT OF CONTROL PANEL



BASIC FUNCTIONS

❶ **DEMO ♪**
Listen to programmed demonstration tunes which impart the charm of individual sounds and rhythm patterns.

❷ **DIGITAL REVERB**
Select from three reverberation effects—**ROOM**, **STAGE** and **HALL**—to apply to the sound.

❸ **PLAY STYLE**
When playing as a piano, select either a conventional keyboard or a split keyboard. The location of the split point can be set at G2, C3 or G3 with the **SPLIT POINT** button.

❹ **AUTO PLAY CHORD**
When you play a chord on the keyboard, an accompaniment pattern which matches the selected rhythm is automatically produced. Select from three modes, according to your level of expertise.

❺ **BALANCE**
The volumes for the **DRUMS**, **BASS**, **ACCOMP**, **LEFT** and **RIGHT** parts are adjusted with their respective **BALANCE** controls.

❻ **ACCOMP PART**
The **AUTO PLAY CHORD** automatic accompaniment is comprised of three **ACCOMP** parts—**1**, **2** and **3**—which you can turn on and off individually.

❼ **ONE TOUCH PLAY/MUSIC STYLE SELECT**
This special feature allows you to easily set all the panel settings, including sounds and effects, in just seconds.

❽ **DYNAMIC ACCOMP**
The patterns in the automatic accompaniment change automatically conforming to the condition of the performance.

❾ **RHYTHM SELECT**
Various automatic rhythm patterns are stored in the permanent memory, for each of which has 3 variations to choose from. Two **METRONOME** types are also available.

❿ **Rhythm control**
The **COUNT & FILL IN** button is used to begin with a one-measure count or to insert a fill-in pattern during the rhythm performance. Use the **INTRO & ENDING** button to start a song with an intro pattern or finish with an ending pattern. **START/STOP** is used to start and stop the rhythm instantly. Or turn on the **SYNCHRO START** button to start the rhythm by pressing a key on the left side of the keyboard. Regulate the speed of the automatic rhythm with the **TEMPO** buttons. **BEAT** indicators light to show the beat.

⓫ **KEYBOARD PERCUSSION**
One press of the **KEYBOARD PERCUSSION** button transforms your keyboard into a whole band of percussive instruments and special sounds. The keys are picture-coded for quick and easy selection.

⓬ **MUSICAL DISPLAY**
During the normal performance mode, the selected rhythm, selected sound and tempo are displayed. When setting the functions for the **COMPOSER**, MIDI and others, the relevant information is displayed.

⓭ **TRANSPOSE**
C is the standard setting, but you can raise or lower the key of the entire keyboard in semi-tone steps across an entire octave.

⓮ **Effects**
EFFECT gives the sound greater depth and breadth. **SUSTAIN PEDAL** enables or disables operation of the sustain pedal.

⓯ **SOUND SELECT**
You can select from 4 different piano sounds. Or choose from 15 poly-type sounds and 3 bass sounds, each of which has 2 variations to choose from.

⓰ **PANEL MEMORY**
Set the desired sounds, effects, split point, volume settings, rhythm, tempo, etc. with the panel controls. Then store the panel settings in one of the programmable memories. Then while you play, the touch of one button recalls the panel settings instantly.

⓱ **PROGRAM SECTION**
Open the sliding cover to use the multi-purpose **PROGRAM SECTION**. These buttons are used when setting the functions for the **SEQUENCER**, **COMPOSER** or MIDI, when using some of the Digital Disk Recorder functions, and when custom-setting any of the numerous programmable functions.

⓲ **Keyboard**
This keyboard features Touch Response, by which you control the volume by playing the keys harder or softer.

⓳ **Pedals**
The sustain pedal and sostenuto pedal apply sustain effects, and the soft pedal works as a damper.

⓴ **Digital Disk Recorder**
The Digital Disk Recorder allows you to store up to 20 performances on a memory disk.

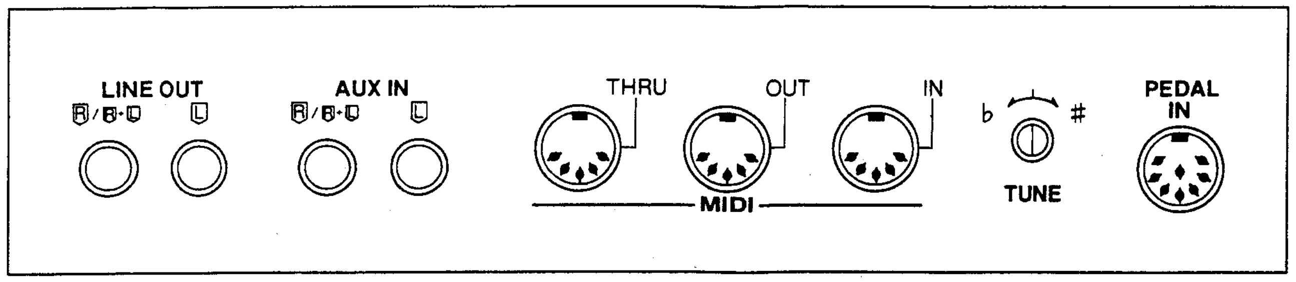
Initialization

The following procedure resets all programmable settings, functions and memories to their initialized (factory-preset) status. Use this procedure if the buttons, keys, etc. malfunction, or when you wish to reset the memories and functions.

<Procedure>
1. Turn off the **POWER** button.
2. While pressing the three leftmost buttons in the **RHYTHM SELECT** section (**METRONOME 1**, **METRONOME 2** and **1**) at the same time, turn the **POWER** button on again.

TERMINALS

(On the rear of the piano)


LINE OUT
R/R+L
L
AUX IN
R/R+L
L
THRU
OUT
IN
MIDI
b
#
TUNE
PEDAL IN

LINE OUT (output level 1.5 Vrms, 600 Ω)
By plugging into an external high-power amplifier, the sound can be reproduced at a high volume. Or connect a tape recorder and use them as recording terminals. To output monaural sound, connect the external equipment to the **R/R+L** terminal. (Do not connect the **L** terminal.)

AUX IN (input level 500 mV, 33 kΩ)
Other instruments such as a rhythm machine or sound module can be connected to the piano so that the sound is output from the piano. To receive monaural sound, connect the other instrument to the **R/R+L** terminal. (Do not connect the **L** terminal.)

MIDI (Musical Instrument Digital Interface)
MIDI is the standard specification that enables connection to equipment such as synthesizers and personal computers. Data transmission and reception are possible between the Technics Digital Ensemble and instruments provided with MIDI terminals.

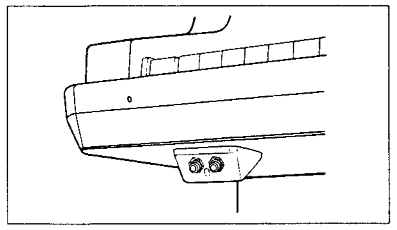
IN: The terminal that receives data from external equipment.
OUT: The terminal that transmits data from the piano to external equipment.
THRU: The terminal that transfers data from the IN terminal directly to other equipment.

- Use a 5-pin DIN cord (less than 15m long) for these connections.

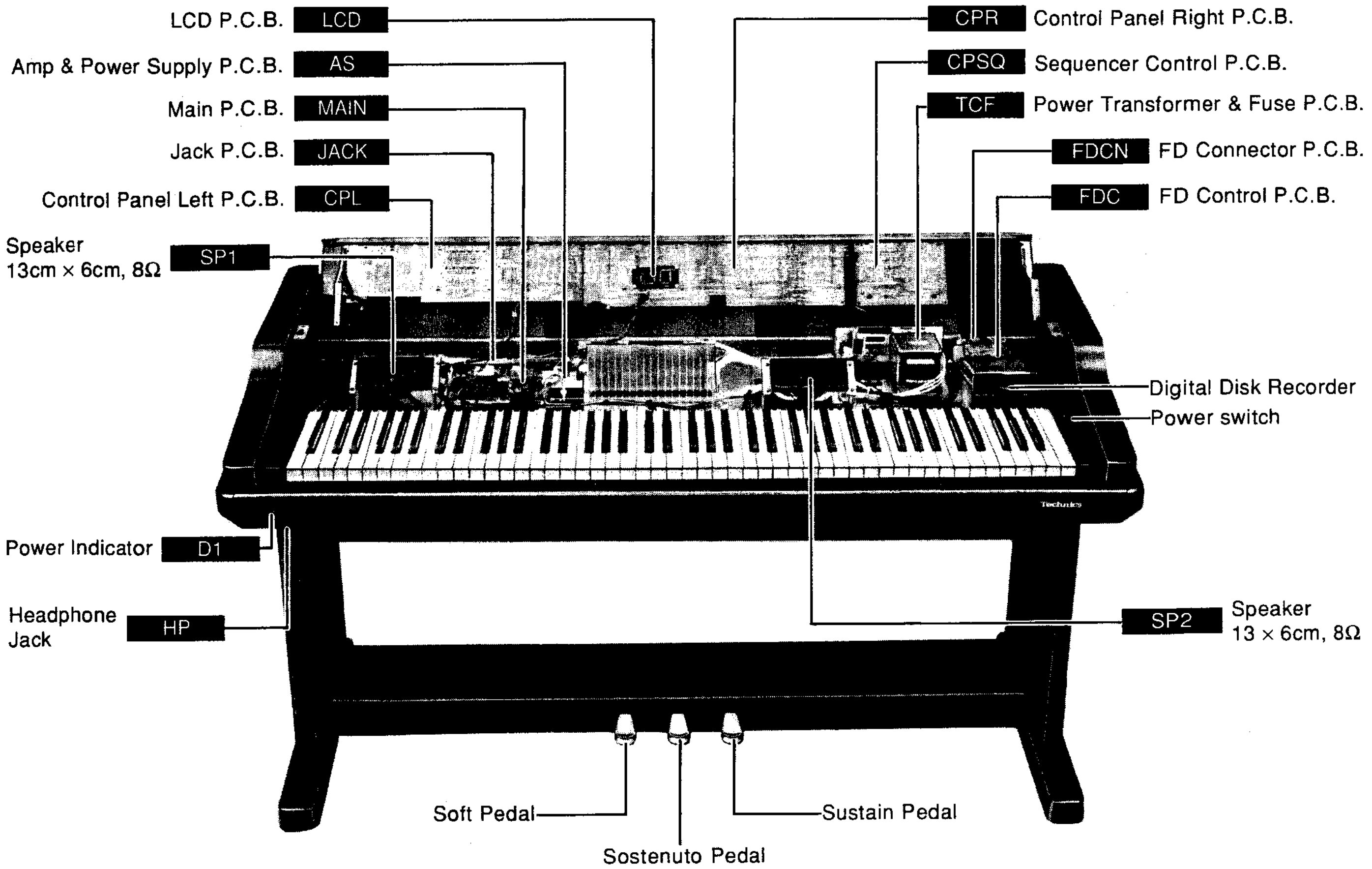
TUNE
During a performance with other instruments, fine adjustments of pitch can be made using this knob.
The center position is standard pitch (A=440Hz).
The pitch is adjustable within a range of A=427.3~453.0Hz.
During pitch adjustment, the pitch is indicated on the display in units of Hz.

PEDAL IN
Connect the cord from the included stand to this terminal.

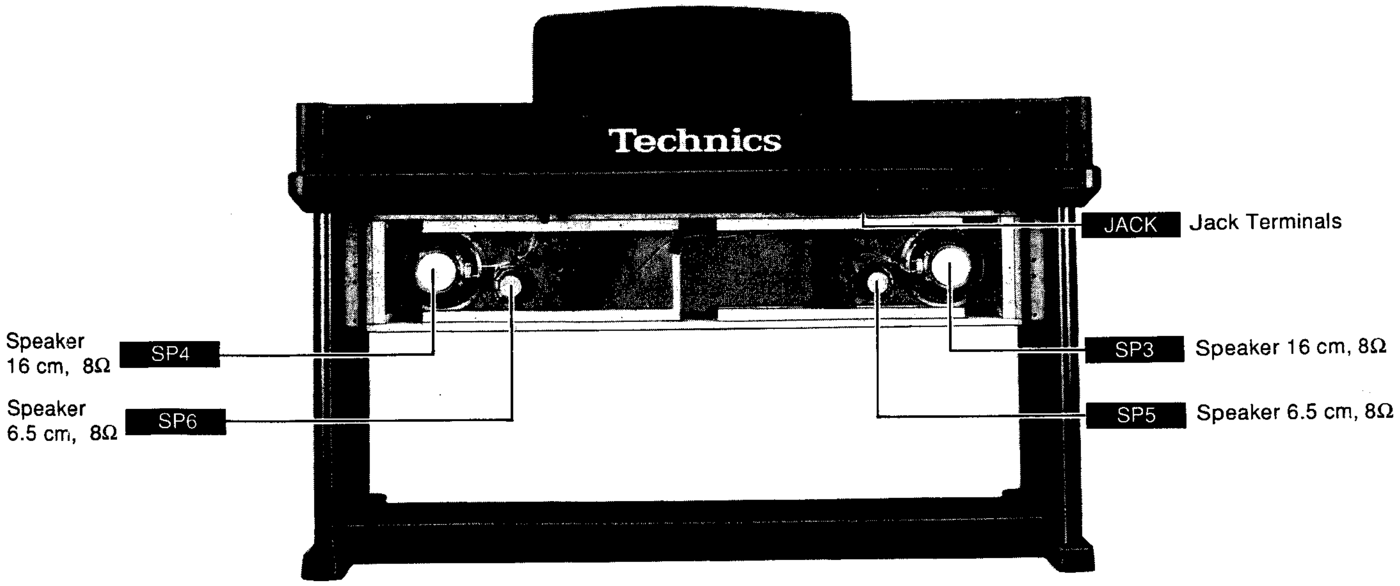
PHONES (🎧) ×2
For silent practice headphones may be used. When plugged in, the speaker system is automatically switched off, and sound is heard only through the headphones.



PARTS LOCATION


LCD P.C.B. LCD
Amp & Power Supply P.C.B. AS
Main P.C.B. MAIN
Jack P.C.B. JACK
Control Panel Left P.C.B. CPL
Speaker 13cm × 6cm, 8Ω SP1
CPR Control Panel Right P.C.B.
CPSQ Sequencer Control P.C.B.
TCF Power Transformer & Fuse P.C.B.
FDCN FD Connector P.C.B.
FDC FD Control P.C.B.
Digital Disk Recorder
Power switch
Power Indicator D1
Headphone Jack HP
SP2 Speaker 13 × 6cm, 8Ω
Soft Pedal
Sustain Pedal
Sostenuto Pedal

[Photo-1]


Technics
JACK Jack Terminals
Speaker 16 cm, 8Ω SP4
Speaker 6.5 cm, 8Ω SP6
SP3 Speaker 16 cm, 8Ω
SP5 Speaker 6.5 cm, 8Ω

[Photo-2]

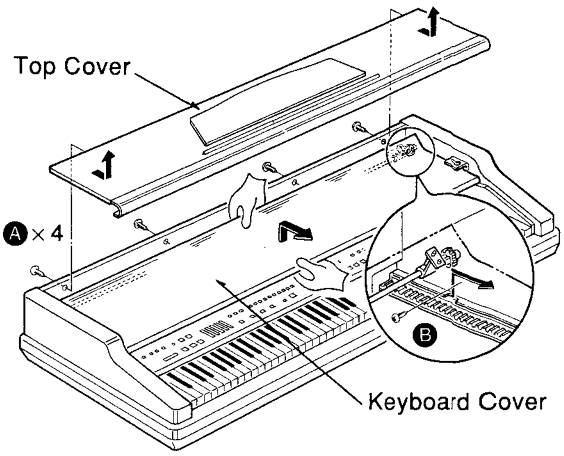
DISASSEMBLY INSTRUCTIONS

[1] Removing the top cover

1. Remove the top cover affixing screws (Ⓐ 4 pcs.).
2. Slide the top cover forward and lift up (as shown by the arrows).

[2] Removing the keyboard cover

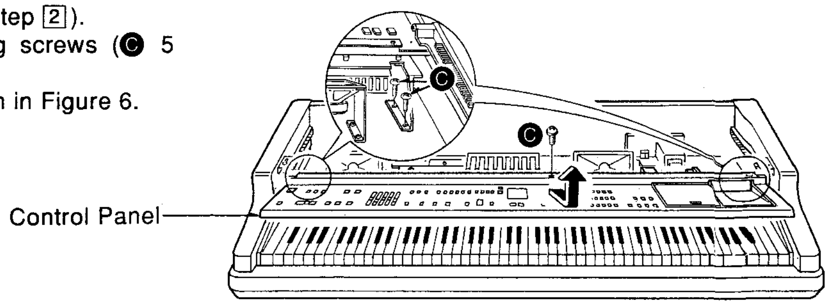
1. Remove the top cover (see Step [1]).
2. Remove the screws from the keyboard cover guide rails (Ⓑ 2 pcs.).
3. Match the gears of the keyboard cover with the notches in the guide rail, and raise the gears to release them from the guide rails.
4. Remove the keyboard cover by sliding it forward.



[Fig.5]

[3] Removing the control panel

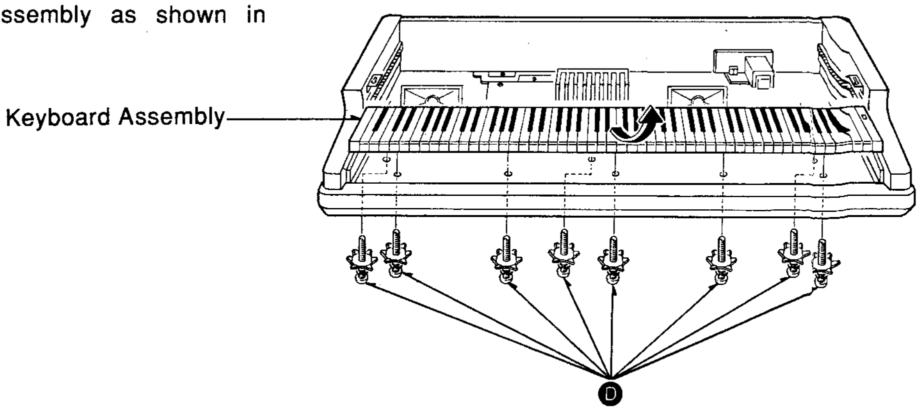
1. Remove the keyboard cover (see Step [2]).
2. Remove the control panel affixing screws (Ⓒ 5 pcs.).
3. Remove the control panel as shown in Figure 6.



[Fig.6]

[4] Removing the keyboard assembly

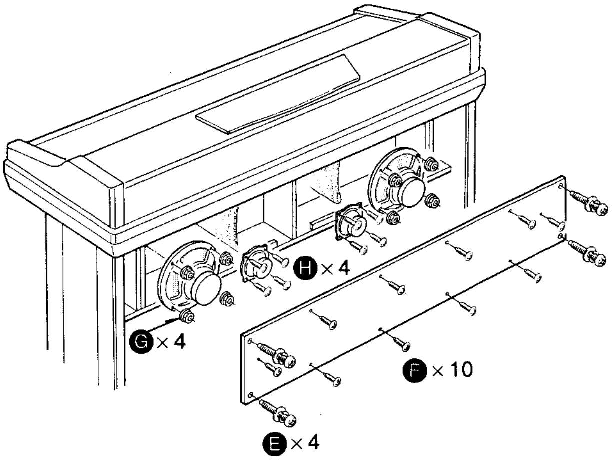
1. Remove the control panel (see Step [3]).
2. Remove the keyboard assembly affixing screws located on the bottom of the cabinet (Ⓓ 8 pcs.).
3. Remove the keyboard assembly as shown in figure 7.



[Fig. 7]

5 Removing the speakers

1. Remove the mounting screws for the rear board of the speaker box (Ⓔ 4 pcs. and Ⓕ 10 pcs.).
   - Be careful that the speaker box does not fall off, since it comes free of the L-shaped bracket of the stand.
2. Remove the mounting nuts for the 16 cm speakers (Ⓖ 4 pcs. each).
3. Remove the mounting screws for the 6.5 cm speakers (Ⓗ 4 pcs. each).



[Fig. 8]

6 Key(s)

Disassembly

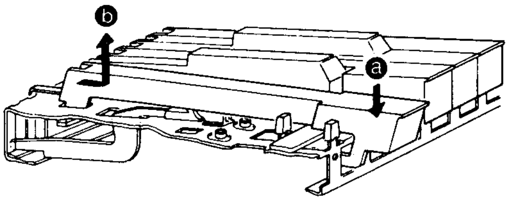
1. Remove the keyboard assembly (see Step 4).
2. To release the key claw.
   ⓐ Press the front of the key downward slightly.
   ⓑ Press the rear of the key forward gently.
3. To remove the key, lift as shown in Figure 9.

NOTE:

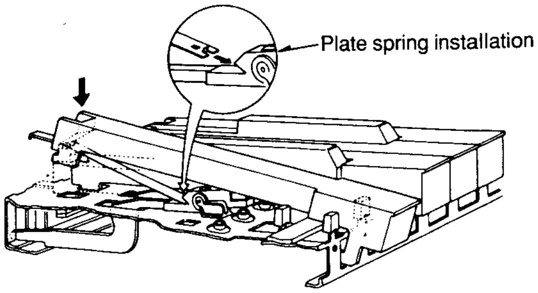
- The key claw is easily broken. Do not apply undue force. Should a key claw break, it can still be used; however, a replacement is recommended.
- If a black key is to be replaced it is necessary to remove both adjacent white keys.

Assembly

1. Insert the front part of the key into the chassis.
2. Insert the plate spring into the hammer notch as shown in Figure 10.
3. While slowly lowering the key into the chassis, insert the plate spring into the notch at the rear of the key.
4. Carefully insert the key into the opening in the chassis and slide the key towards the rear to lock it in place.



[Fig. 9]



[Fig. 10]

7 Removing the printed circuit boards

- Remove the top cover (see Step 1).

MAIN P.C.B.

1. Remove the MAIN P.C.B. mounting screws (Ⓘ 2 pcs.).
2. Release the claws of the 2 P.C.B. holders.

AS P.C.B.

1. Remove the AS P.C.B. mounting screws (Ⓙ 3 pcs.).
2. Remove the ground wire holding screw (Ⓚ 1 pc.).
3. Remove the claws of the P.C.B. holder.

JACK P.C.B.

1. Remove the MAIN and AS P.C.B.
2. Remove the JACK P.C.B. mounting screws (Ⓛ 3 pcs.).
3. Remove the ground wire holding screws (Ⓜ 2 pcs.).

HP P.C.B.

1. Remove the keyboard assembly (see Step 4).
2. Remove the headphone jack mounting nuts (Ⓝ 2 pcs.).
3. Remove the HP P.C.B. mounting screw (Ⓞ 1 pc.).
4. Remove the ground wire holding screw (Ⓟ 1 pc.).

TCF P.C.B.

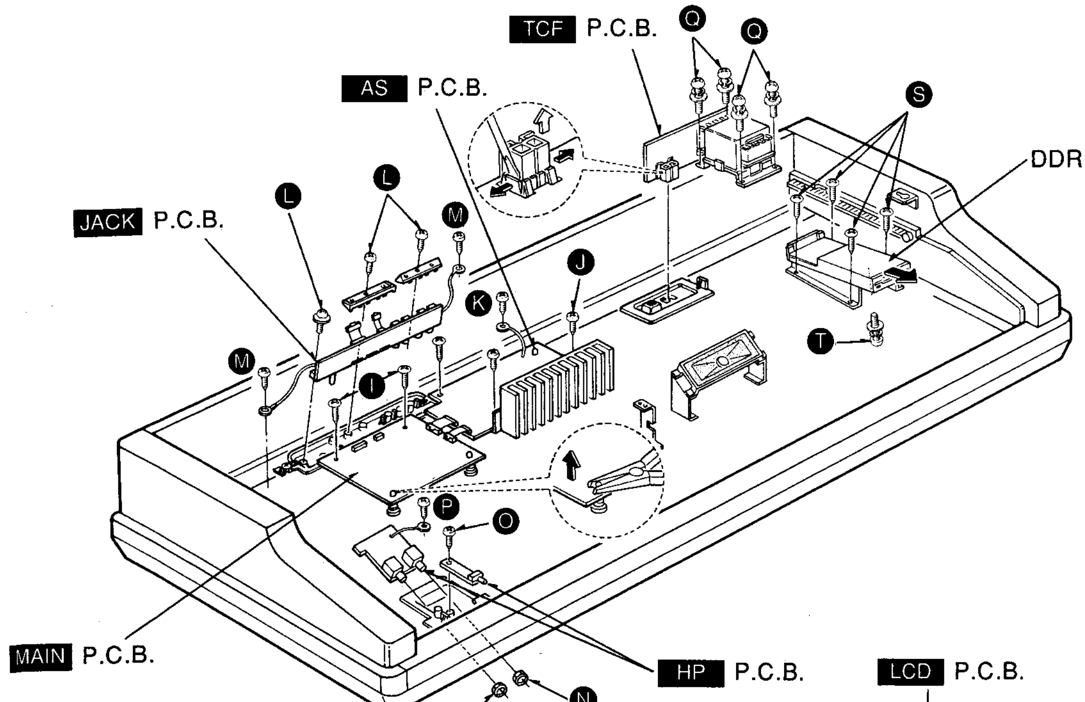
1. Remove the power transformer mounting screws (Ⓠ 4 pcs.).
2. Release the claws of the AC IN connector bracket.

LCD P.C.B.

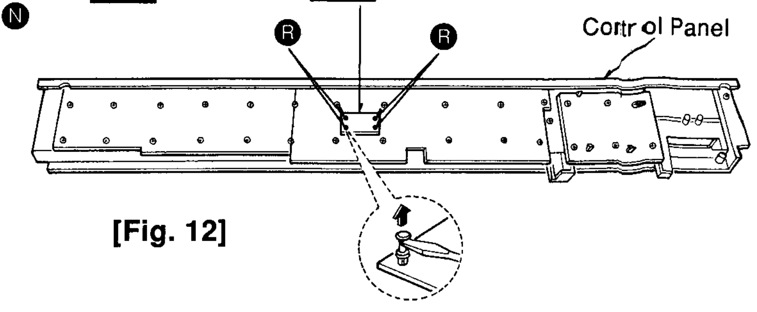
1. Remove the control panel (see Step 3).
2. Remove the LCD P.C.B. mounting pins (Ⓡ 4 pcs.).

8 Removing the digital disk recorder (DDR)

1. Remove the control panel (see Step 3).
2. Remove the chassis on which DDR is attached and then remove (Ⓢ 4 pcs. and Ⓣ 1 pc.).
3. Pull out the DDR from the connector.



[Fig. 11]



[Fig. 12]

SYMPTOMS WHICH APPEAR TO BE SIGNS OF TROUBLE

The following changes in performance may occur in the Technics Digital Ensemble but do NOT indicate trouble.

Phenomenon		Remedy
Sounds and effects	The buttons, keys, etc. malfunction.	• Turn off the **POWER** button once, then turn it on again. If this procedure is not successful, turn off the **POWER** button once. Then, while pressing the three leftmost buttons in the **RHYTHM SELECT** section (**METRONOME 1**, **METRONOME 2** and **1**) at the same time, turn the **POWER** button on again. (Note that, in this case, all programmable settings, functions and memories return to their factory-preset status.)
	No sound is produced when the keys are pressed.	• The **MAIN VOLUME** is at the minimum setting. Adjust the volume with the **MAIN VOLUME** control. • The **BALANCE** volumes are set to **OFF**. Use the sliding **BALANCE** controls to set the volumes of the relevant parts to appropriate levels. • The local control for a part performed on the keyboard is set to off. Set the local control to on.
	The octave is higher or lower for some **SOUND SELECT** sounds.	• An octave change is programmed for some instrument sounds in order to make them easy to play. This is not a malfunction.
	Only percussive instrument sounds are produced when the keyboard is played.	• The **KEYBOARD PERCUSSION** button is on. Turn it off to return the keyboard to the normal sound.
	The sustain does not work even when the sustain pedal is depressed.	• When the **SUSTAIN PEDAL** button is off, the sustain does not work even when the pedal is depressed. Turn on the **SUSTAIN PEDAL** button.
	The sostenuto pedal and soft pedal do not operate properly. For example, when the soft pedal is depressed, the rhythm starts or a fill-in is played.	• Different functions can be programmed in these pedals. You can return the pedals to their original functions by turning off the instrument once, or by using the **PEDAL SETTING** mode.
Rhythm	The rhythm does not start.	• The **DRUMS** volume in the **BALANCE** section is set to **OFF**. Use the sliding **BALANCE** control to set the **DRUMS** volume to an appropriate level. • In the **RHYTHM SELECT** section, a **COMPOSER** number button with no stored performance was selected. Change the rhythm or store a new rhythm pattern in the **COMPOSER**. • When a **SEQUENCER** part button (in the **PROGRAM SECTION**) is on, the rhythm will not start unless the rhythm has been stored. Turn off the **SEQUENCER** part buttons. • The MIDI clock is set to the external clock. Set the MIDI clock to the internal clock.
AUTO PLAY CHORD	No sound is produced for the automatic accompaniment, or only the sounds of some parts are produced.	• The **BALANCE** volumes are set to **OFF**. Use the sliding **BALANCE** controls to set the volumes of the relevant parts to appropriate levels. • An **ACCOMP** part does not sound if its corresponding **ACCOMP PART 1**, **2** or **3** button is off. Press the desired **ACCOMP PART 1**, **2** and **3** buttons to turn them on. • An **ACCOMP** part does not sound if its volume is set to 0. The volume of each **ACCOMP** part can be adjusted independently.

Phenomenon		Remedy
SEQUENCER	Storage is not possible.	• The remaining storage capacity of the **SEQUENCER** memory is 0. Use the **TRACK CLEAR** or **SONG CLEAR** function to erase the memory. • The MIDI **EXT. SEQ. MODE** is set to on. Set it to off.
	Multi-track storage is not possible.	• The playback track has been selected, but the **START/STOP** button has not been pressed. A flashing track indicator shows the track which is ready for recording, and a lit track indicator shows a track which is ready for playback. To record one track while listening to another (playback) track, press the **START/STOP** button to begin playback.
	A previously stored song is played back.	• The tracks of a song which was previously stored have not been cleared. Use the **TRACK CLEAR** or **SONG CLEAR** function to erase the memory before recording a new song.
COMPOSER	Storage is not possible.	• The remaining storage capacity of the **COMPOSER** memory is 0. Erase a **COMPOSER** number button in the **RHYTHM SELECT** section in which a pattern is stored.
	The playback timing of the rhythm pattern is different from the timing with which it was stored.	• The **QUANTIZE** function was on when the pattern was recorded. Set the **QUANTIZE** function to "OFF".
	Setting the time signature is not possible.	• The time signature cannot be changed for a pattern which is currently stored in the **COMPOSER**. Press the **COMPOSER CLEAR** button to erase the previously stored rhythm pattern.
	When editing a preset rhythm, the drums sound is not erased even when the **PERC ERASE** button is pressed.	• Some of the drums sounds of preset rhythm patterns cannot be erased. Follow the **COMPOSER CLEAR** procedure.
Digital Disk Recorder	The Digital Disk Recorder produces a noise during recording or playback.	• This occurs when the Digital Disk Recorder is reading a disk. It does not indicate a problem.
	When the operation to load from a memory disk is performed, the contents of the **SEQUENCER** are erased.	• When performing the load operation from a memory disk, the **SEQUENCER** memory changes to that of the data loaded from the memory disk. If you wish to preserve a song which is stored in the **SEQUENCER** memory, save it in a memory disk before performing the load procedure.

ERROR DISPLAY

When using the Digital Disk Recorder any of the following error messages may appear on the display.
If an error message appears on the display, follow the appropriate steps to remedy the problem.

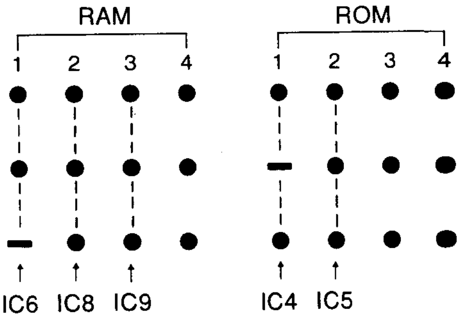
Display	Remedy
SEQUENCER/COMPOSER	
`Error !!` `Extnal seq mode`	The **SEQUENCER** does not function because the **EXT. SEQ. MODE** is on. • Set the **EXT. SEQ. MODE** to off.
`Error !!` `Seq data error`	The data recorded in the **SEQUENCER** is defective. • Perform the recording procedure again.
`Error !!` `* Memory full *`	The **SEQUENCER** or **COMPOSER** memory is full. • No more data can be stored.
`* Change` `Impossible *`	When recording in the **COMPOSER**, you attempted to change the time signature without following the **COMPOSER CLEAR** procedure. • Follow the **COMPOSER CLEAR** procedure, and then change the time signature.
DIGITAL DISK RECORDER	
`Error !!` `* Format error *`	Formatting failure. • Perform the formatting procedure again.
`Error !!` `** Save error **`	Saving failure. • Perform the saving procedure again.
`Error !!` `** Disk full **`	No remaining memory storage capacity. • Insert a new disk, perform the saving procedure after formatting it.
`Error !!` `** Load error **`	Loading failure. • Perform the loading procedure again.
`Error !!` `Song not found`	You have attempted to load a song number which has not been saved. • Load a song number which has been saved.
`Error !!` `Write protected`	The memory disk is write-protected. • Close the write-protect window of the disk.
`Error !!` `Copy protected`	You have attempted to save a song which is copy-protected. • A copy-protected song cannot be saved.
`Error !!` `** Other disk **`	The memory disk has not been formatted by the Digital Disk Recorder. • Insert a correctly formatted disk.
`Error !!` `*** No disk ***`	No memory disk in the Digital Disk Recorder. • Insert a memory disk.

Warning:
- Some pre-recorded disks (for example, those recorded by the manufacturer) are copy-protected. Data from these disks cannot be copied.
- When the power is turned off after a copy-protected song has been loaded, the **SEQUENCER** contents will be erased.
- If a copy-protected song has been loaded and you want to then record a new song in the **SEQUENCER** and save it on a disk, be sure to first turn the power off once or perform the initialization procedure.

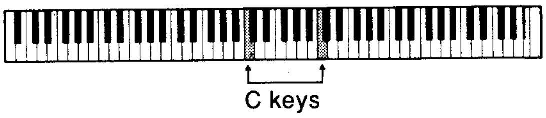
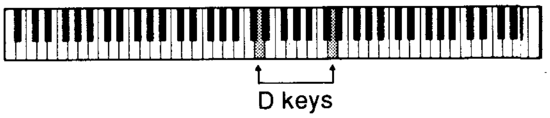
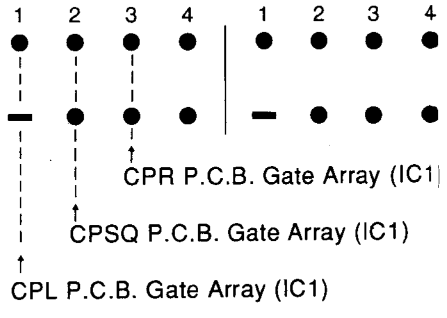
ABOUT THE SELF-DIAGNOSTIC FUNCTION

This model has some self-diagnostic capabilities. When set to the self-diagnostic mode, operation of various components can be verified by following the procedures in the chart below.

<table>
<tr><th>No.</th><th>PCB</th><th>TEST MODE</th><th>Procedure</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">MAIN</td><td>RAM (IC6, 8, 9), ROM (IC4, 5) check</td><td>1. Connect the CHECKING DEVICE (refer to page I-15) to CN7 on the MAIN P.C.B., and turn on the CHECKING DEVICE switch.
2. Turn on the power switch.</td></tr>
<tr><td colspan="2">When the power switch is turned on, the LED of the CHECKING DEVICE flashes 8 times. The first 4 flashes are for the RAM check, and the latter 4 flashes are for the ROM check. The order of the LED flashes corresponds to the respective IC numbers as shown below. If an IC is defective, the corresponding flash time is longer.

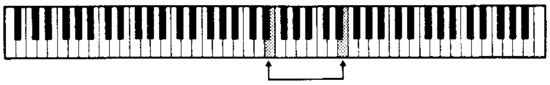
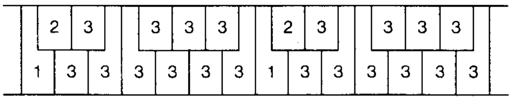
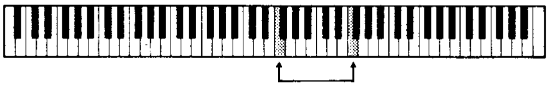
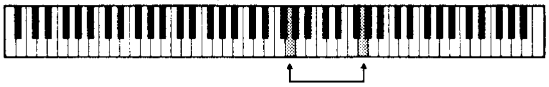
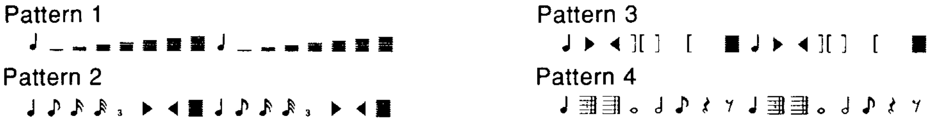
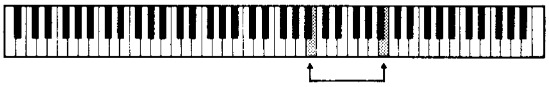
Examples
1. RAM OK, ROM OK →
2. RAM OK, ROM (IC4) defective →
3. RAM (IC6) defective, ROM OK →


RAM
ROM
1 2 3 4
1 2 3 4
IC6
IC8
IC9
IC4
IC5

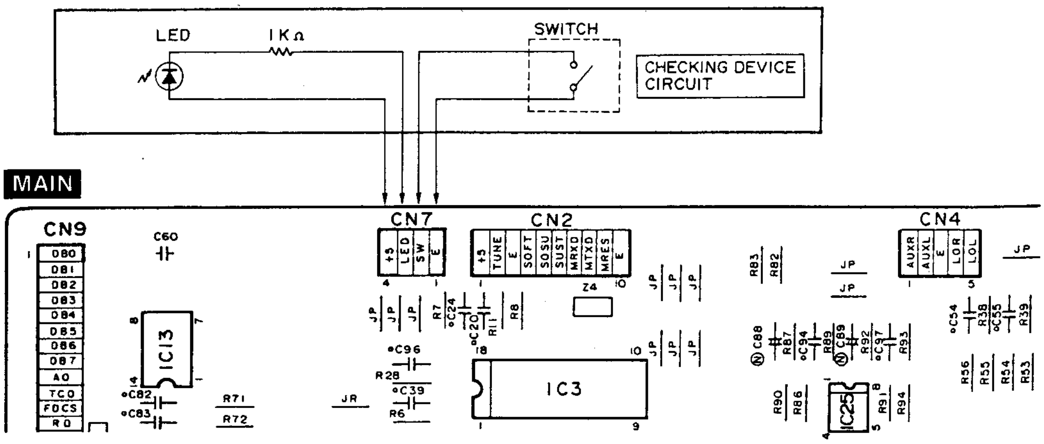
Note: ● indicates short flash time= OK
▬ indicates long flash time = Defective</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">MAIN</td><td>V25 gate array (IC2) check</td><td>While pressing two C keys simultaneously, turn on the power switch.
 </td></tr>
<tr><td colspan="2">The contrast of the LCD (Musical Display) on the control panel changes in 8 stages. If the contrast does not change, the gate array (IC2) is defective.</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">CPL
CPSQ
CPR</td><td>Control panel gate array check.</td><td>1. Connect the CHECKING DEVICE to CN7 on the MAIN P.C.B. (The Checking Device switch should be off.)
2. On the control panel, set all the sliding BALANCE controls to OFF.
3. While pressing two D keys simultaneously, turn on the power switch.
 </td></tr>
<tr><td colspan="2">When the power switch is turned on, the LED of the CHECKING DEVICE flashes 8 times. The order of the LED flashes corresponds to the gate arrays (IC) on the respective P.C.B.s as shown below. If an IC is defective, the corresponding flash time is longer. There are 4 flashes in the cycle, which is repeated once, totaling 8 flashes.
1. OK →
2. CPL Gate Array defective →


1 2 3 4
1 2 3 4
CPR P.C.B. Gate Array (IC1)
CPSQ P.C.B. Gate Array (IC1)
CPL P.C.B. Gate Array (IC1)

Note: ● indicates short flash time= OK
▬ indicates long flash time = Defective</td></tr>
</table>

No.	PCB	TEST MODE	Procedure
4	MAIN	Wave ROM (IC20, 21, 22) check	1. While pressing two E keys simultaneously, turn on the power switch. 2. Select the GRAND PIANO sound.  E keys
		When set to the self-diagnostic mode, the Wave ROM outputs a sine wave. The Wave ROMs correspond to the keyboard keys as shown in the diagram to the right. When a key is pressed, the corresponding sine wave sound is produced. If no sound is produced, or if the sound is distorted, the Wave ROM corresponding to that key is defective.	• The key number indicates the Wave ROM number (ROM 1: IC20, ROM 2: IC21, ROM 3: IC22).  2 3 3 3 3 2 3 3 3 3 1 3 3 3 3 3 3 1 3 3 3 3 3 3
5	CPL, CPR CPSQ	LED & SW check	1. On the control panel, set all the sliding BALANCE controls to OFF. 2. While pressing two F keys simultaneously, turn on the power switch.  F keys
		All the LEDs turn off after lighting once. Confirm that all the LEDs light.	
6	LCD	LCD Display check	While pressing two G keys simultaneously, turn on the power switch.  G keys
		The test pattern for the LCD character display is shown. There are 4 different test patterns, which are selected with the TRANSPOSE buttons. Only the first display of the test pattern display differs, as shown at right. Confirm that the characters appear correctly.  Pattern 1 Pattern 3 Pattern 2 Pattern 4	
7	MKB	Keyboard ROM (IC2) check	While pressing two B keys simultaneously, turn on the power switch.  B keys
		If the keyboard ROM (IC2) is OK, one confirming beep will sound. If it is defective, several consecutive error beeps will sound.	

■ Connection between serving CHECKING DEVICE and MAIN PCB


LED
1KΩ
SWITCH
CHECKING DEVICE CIRCUIT
MAIN
CN9
CN7
CN2
CN4
+5
LED
SW
E
TUNE
SOFT
SOSU
SUST
MRXD
MTXD
MRES
AUXR
AUXL
LOR
LOL
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
A0
TCO
FDCS
RD
IC13
IC3
IC25
C60
C82
C83
R71
R72
C96
R28
C39
R6
Z4
JP

MIDI IMPLEMENTATION CHART

Digital Ensemble [SX-PR270] **(Transmitted)**

Function		RIGHT	LEFT	ACCOMP 1	ACCOMP 2	ACCOMP 3	BASS	DRUMS	Remarks
Basic Channel	Default	1~16	1~16	1~16	1~16	1~16	1~16	1~16	memorized
	Changed	1~16	1~16	1~16	1~16	1~16	1~16	1~16	
Mode	Default	3	3	3	3	3	3	3	OMNI OFF POLY MODE
	Messages	×	×	×	×	×	×	×	
	Altered	—	—	—	—	—	—	—	
Note Number		0~127	0~127	0~127	0~127	0~127	0~127	36~79**	Changes depending on the position of the transpose control.
	True voice	—	—	—	—	—	—	—	
Velocity	Note ON	○	○	○	○	○	○	○	
	Note OFF	× (9nH:v=0)	× (9nH:v=0)	× (9nH:v=0)	× (9nH:v=0)	× (9nH:v=0)	× (9nH:v=0)	× (9nH:v=0)	
After Touch	Key's	×	×	×	×	×	×	×	
	Ch's	×	×	×	×	×	×	×	
Pitch Bender		○***	○***	○***	○***	○***	○***	×	
Control Change	0, 32	○	○	○	○	○	○	○	bank select (TECH 1 mode only)
	1	○***	○***	○***	○***	○***	○***	×	modulation
	7	○	○	○	○	○	○	○	volume
	64	○	○	○	○	○	○	×	sustain
	66	○	○	×	×	×	×	×	sostenuto pedal
	67	○	○	○	○	○	○	×	soft pedal
	80	×	○	×	×	×	×	×	auto play chord
	82	×	×	×	×	×	×	○	intro & ending, fill in
	83	○	○	×	×	×	×	×	octave shift
	93	○	×	×	×	×	×	×	chorus (EFFECT)
Prog Change		○	○	○	○	○	○	○	
	True #	—	—	—	—	—	—	—	
System exclusive		○							
System common	Song Pos	×							
	Song Sel	○×* (0~19)							
	Tune	×							
System Real Time	Clock	○							
	Commands	○×*							start/stop, continue
Aux Messages	Local ON/OFF	×	×	×	×	×	×	×	
	All notes OFF	×	×	×	×	×	×	×	
	Active Sense	○							
	Reset	×							
Notes		* ○ × ....Whether or not the data for each of these items is transmitted can be set. **When the program change mode is set to TECH (1 or 2), note numbers for **DRUMS** differ. ***Transmitted during **SEQUENCER** playback and during rhythm performance.							

Mode 1: OMNI ON, POLY **Mode 2:** OMNI ON, MONO

Mode 3: OMNI OFF, POLY **Mode 4:** OMNI OFF, MONO

○: Yes
×: No

Digital Ensemble [SX-PR270] **(Recognized)**

Function		RIGHT	LEFT	ACCOMP 1	ACCOMP 2	ACCOMP 3	BASS	DRUMS	Remarks
Basic Channel	Default	1~16	1~16	1~16	1~16	1~16	1~16	1~16	memorized
	Changed	1~16	1~16	1~16	1~16	1~16	1~16	1~16	
Mode	Default	3	3	3	3	3	3	3	OMNI OFF POLY MODE
	Messages	×	×	×	×	×	×	×	
	Altered	—	—	—	—	—	—	—	
Note Number		0~127	0~127	0~127	0~127	0~127	0~127	36~79**	Changes depending on the sound.
	True voice	0~127	0~127	0~127	0~127	0~127	0~127	36~79	
Velocity	Note ON	○	○	○	○	○	○	○	
	Note OFF	×	×	×	×	×	×	×	
After Touch	Key's	×	×	×	×	×	×	×	
	Ch's	×	×	×	×	×	×	×	
Pitch Bender		○	○	○	○	○	○	×	
Control Change	0, 32	○	○	○	○	○	○	○	bank select (TECH 1 mode only)
	1	○	○	○	○	○	○	×	modulation
	7	○	○	○	○	○	○	○	volume
	64	○	○	○	○	○	○	×	sustain
	66	○	○	×	×	×	×	×	sostenuto pedal
	67	○	○	○	○	○	○	×	soft pedal
	80	×	○	×	×	×	×	×	auto play chord
	82	×	×	×	×	×	×	○	intro & ending, fill in
	83	○	×	×	×	×	×	×	octave shift
	93	○	×	×	×	×	×	×	chorus (EFFECT)
Prog Change		0~16 (PR170)	0~16 (PR170)	0~16 (PR170)	0~16 (PR170)	0~16 (PR170)	0~16 (PR170)	0~29	
	True #	0~21 (PR270/PR370)	0~21 (PR270/PR370)	0~21 (PR270/PR370)	0~21 (PR270/PR370)	0~21 (PR270/PR370)	0~21 (PR270/PR370)		
System exclusive		×							
System common	Song Pos	×							
	Song Sel	○×* (0~19)							
	Tune	×							
System Real Time	Clock	○							
	Commands	○ ×*							start/stop, continue
Aux Messages	Local ON/OFF	×	×	×	×	×	×	×	
	All notes OFF	○	○	○	○	○	○	○	
	Active Sense	○							
	Reset	×							
Notes		* ○ × ....Whether or not the data for each of these items is received can be set. **When the program change mode is set to TECH (1 or 2), note numbers for **DRUMS** differ.							

Mode 1: OMNI ON, POLY **Mode 2:** OMNI ON, MONO

Mode 3: OMNI OFF, POLY **Mode 4:** OMNI OFF, MONO

○: Yes
×: No

PRECAUTIONS BEFORE SERVICING

■ Precautions for measuring of the output waveforms.

1. The waveform was measured with a "National Digital Storage Oscilloscope VP-5730A". Therefore the waveforms of musical tone signals shown may differ somewhat due to the difference in the timing of triggering.
2. Since the 1/10 test probe is used, the indicated voltage value on the bottom part of each waveform photo is 1/10 of the actual value (e.g. 0.2V/cm should be 2.0V/cm).
3. To measure the waveforms, first set this unit to the self-diagnostic mode (refer to page I-15, No. 4). The WAVE ROM output will then be output as a sine wave to facilitate the servicing check.

■ Important safety notice:

Components identified by a ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

■ Symbolic Marks

The symbolic marks for resistors and capacitors which used in this circuits are classified as following TABLE-1 and TABLE-2.

1. RESISTORS
   - Resistors without symbolic mark are FIXED CARBON FILM RESISTORS (ERD-type).
   - All resistors are 1/4WATT, ±5% TOLERANCE unless otherwise designated in the schematic diagrams.

(TABLE-1)

SYMBOL	SPECIFICATION	SYMBOL	SPECIFICATION
Ⓕ	Fixed Carbon Film Resistors "FLAME-PROOF" (ERD—F—type)	Ⓕ	Fixed Metal Film Resistors "FLAME-PROOF" (ERX—type)
Ⓕ	Fixed Wire Wound Resistors "FLAME-PROOF" (ERF—type)	🄵	Fuse Type Fixed Metal Oxide Film Resistors "FLAME-PROOF" (ERQ—type)
Ⓕ	Fixed Metal Oxide Film Resistors "FLAME-PROOF" (ERG—type)	🄵	Fuse Type Fixed Carbon Film Resistors "FLAME-PROOF" (ERD2FC—type)
Ⓖ	Fixed Metal Film Resistors (Precision and High Stability) (ERO—type)		

2. CAPACITORS
   - Capacitors without symbolic mark are POLYESTER CAPACITORS. (ECQM-type, ECQG-type, ±10% Tolerance)
   - Polarized capacitors without symbolic mark are Aluminum Electrolytic Capacitors. (ECEA—type, ±20% Tolernace)

(TABLE-2)

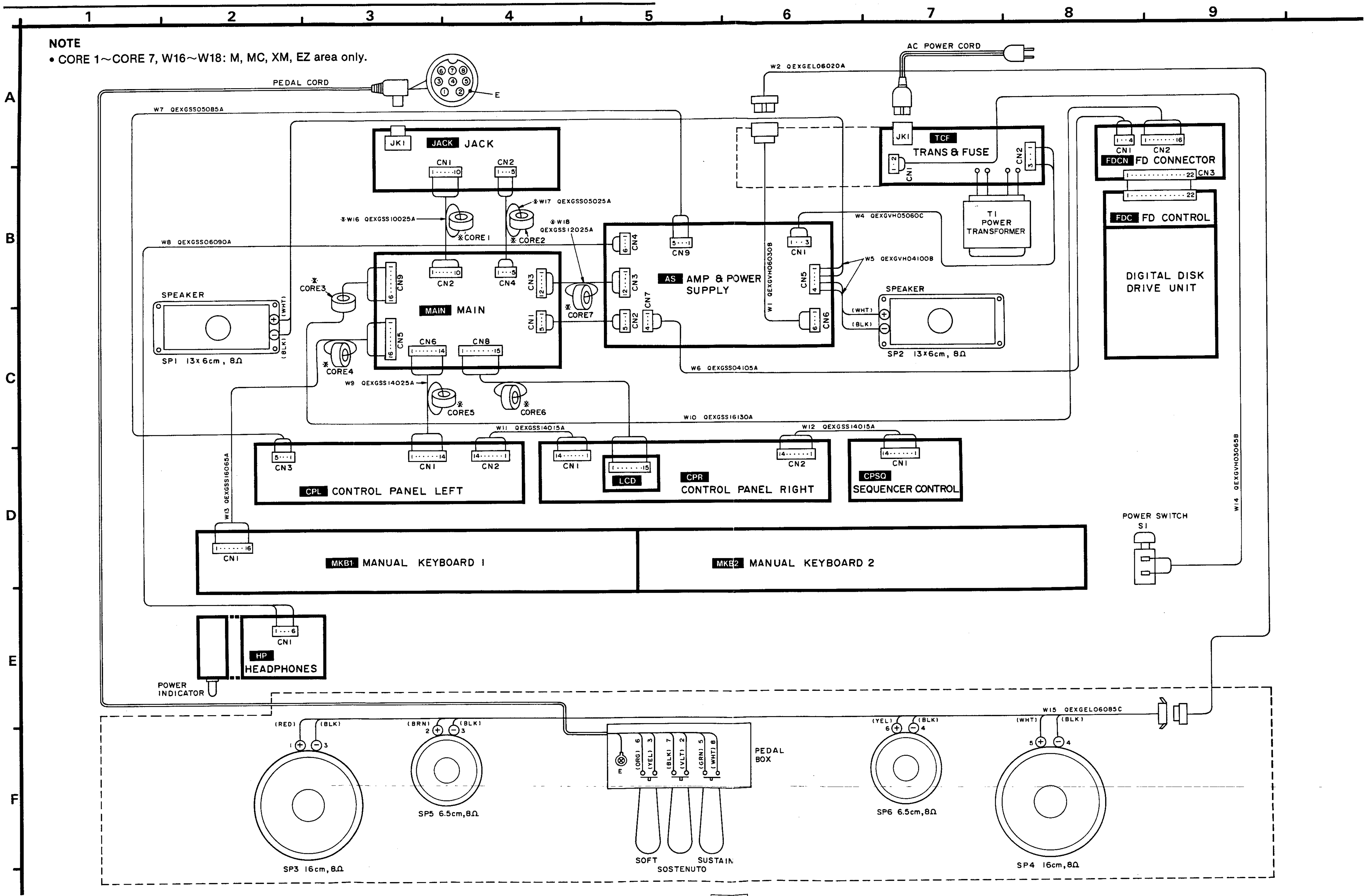
SYMBOL	SPECIFICATION	TYPE
Ⓝ	Non-Polarized Electrolytic Capacitors	ECEA_KN_type
Ⓨ	Non-Polarized Electrolytic (for Network System)	ECEA_Y_type
(MS)	Aluminum Electrolytic Capacitors (Low leakage current type)	ECEA_M_type
Ⓩ	Aluminum Electrolytic Capacitors (Low impedance type)	ECEA_Z_type
Ⓣ	Tantalum Solid Electrolytic Capacitors	ECS_type
(TF)	Metalized Plastic Film Capacitors (TF Series)	ECQV_type
	Polyester Film Capacitors	ECQB_type
○	Temperature Compensating Ceramic Capacitors	ECC_type
	High-Dielectric Constant Ceramic Capacitors	ECK_type ECR_type
	Ceramic Capacitors (Cylinder type)	ECBA_type
	Metalized Polyester Film Capacitors for Across the Line	ECQ_EW_type
	Aluminum Electrolytic Capacitors for Smoothing Circuit	ECES_type
	Multilayer Ceramic Chip Capacitors	ECUV_type

MEMO

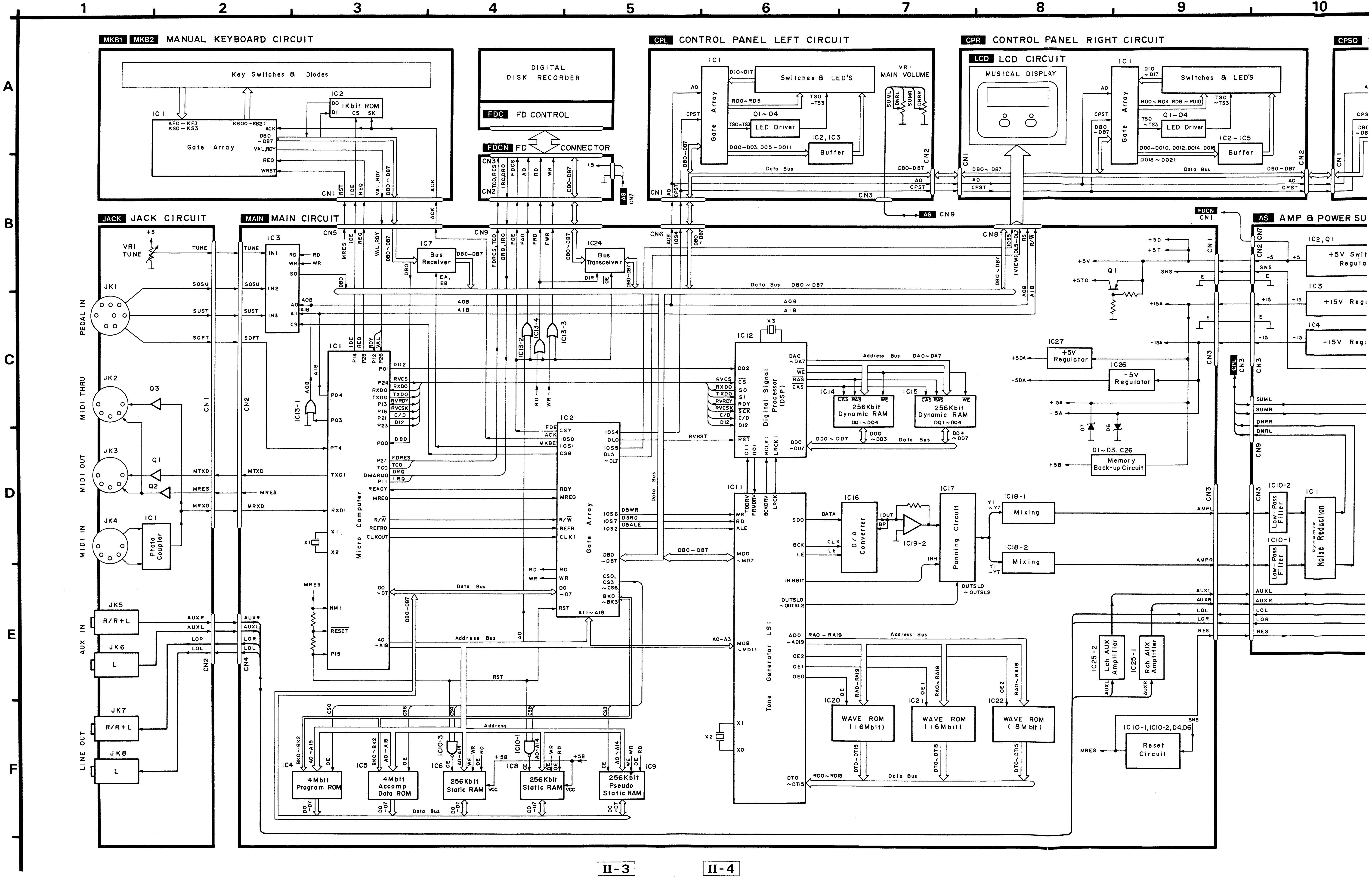
WIRING CONNECTION DIAGRAM

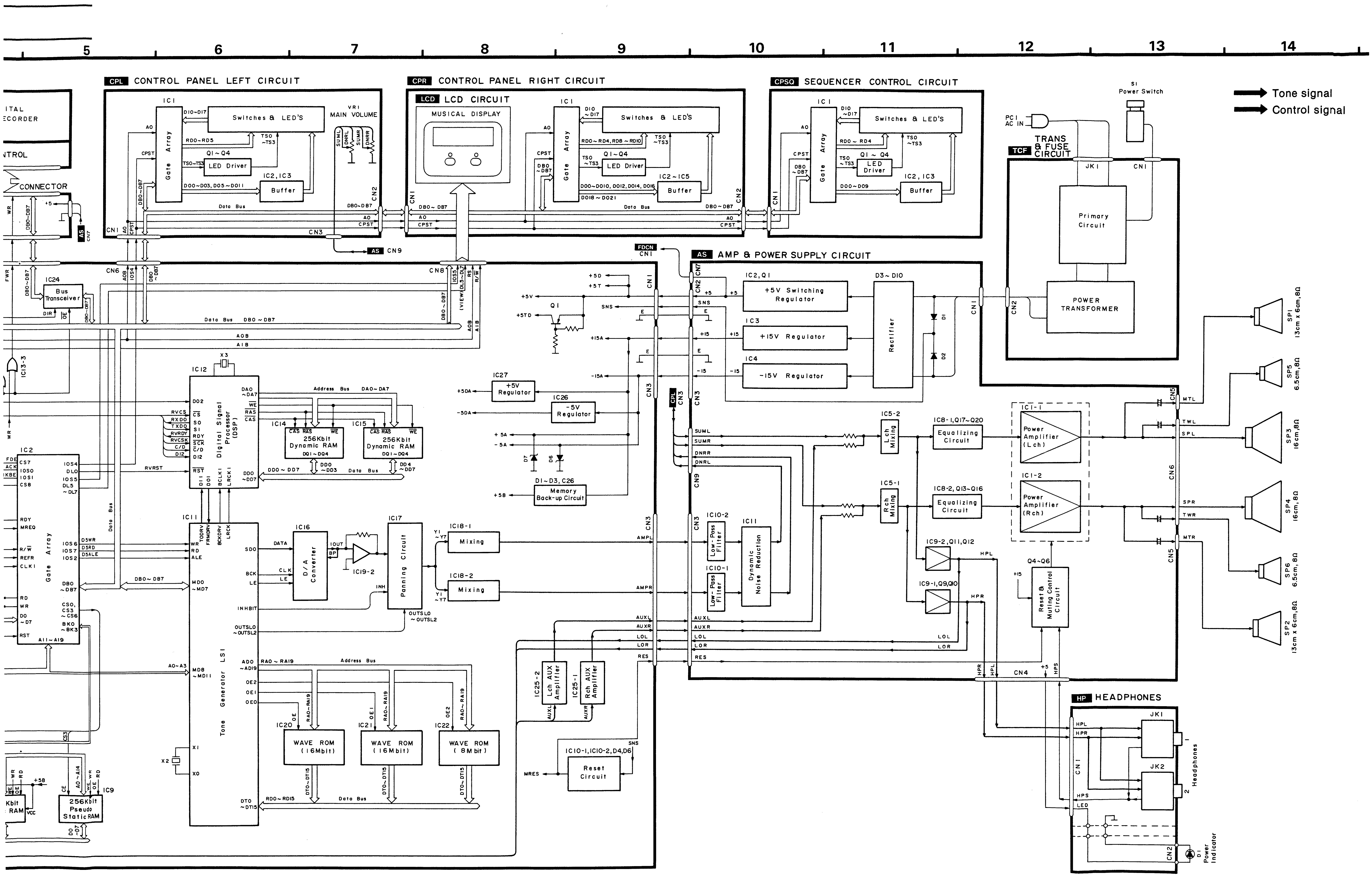
NOTE

- CORE 1~CORE 7, W16~W18: M, MC, XM, EZ area only.


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
PEDAL CORD
E
AC POWER CORD
W2 QEXGEL06020A
W7 QEXGSS05085A
JK1
JACK JACK
CN1
CN2
TCF
TRANS & FUSE
JK1
CN1
CN2
T1
POWER
TRANSFORMER
CN1
CN2
FDCN FD CONNECTOR
CN3
FDC FD CONTROL
DIGITAL DISK
DRIVE UNIT
※W16 QEXGSS10025A
※CORE1
※W17 QEXGSS05025A
※CORE2
※W18
QEXGSS12025A
W8 QEXGSS06090A
W4 QEXGVH05060C
W5 QEXGVH04100B
W1 QEXGVH06030B
CN4
CN9
CN1
AS AMP & POWER
SUPPLY
CN3
CN7
CN2
CN5
CN6
※
CORE3
CN9
CN2
CN4
CN3
MAIN MAIN
CN1
※
CORE7
CN5
CN6
CN8
SPEAKER
(WHT)
(BLK)
SP1 13x6cm, 8Ω
SPEAKER
(WHT)
(BLK)
SP2 13x6cm, 8Ω
※
CORE4
W9 QEXGSS14025A
※
CORE5
※
CORE6
W6 QEXGSS04105A
W10 QEXGSS16130A
W11 QEXGSS14015A
W12 QEXGSS14015A
W13 QEXGSS16065A
W14 QEXGVH03065B
CN3
CN1
CN2
CPL CONTROL PANEL LEFT
CN1
LCD
CN2
CPR
CONTROL PANEL RIGHT
CN1
CPSQ
SEQUENCER CONTROL
POWER SWITCH
S1
CN1
MKB1 MANUAL KEYBOARD 1
MKB2 MANUAL KEYBOARD 2
CN1
HP
HEADPHONES
POWER
INDICATOR
W15 QEXGEL06085C
(RED)
(BLK)
(BRN)
(BLK)
(ORG)
(YEL)
(BLK)
(VLT)
(GRN)
(WHT)
PEDAL
BOX
(YEL)
(BLK)
(WHT)
(BLK)
SP5 6.5cm,8Ω
SP6 6.5cm,8Ω
SOFT
SOSTENUTO
SUSTAIN
SP3 16cm, 8Ω
SP4 16cm, 8Ω

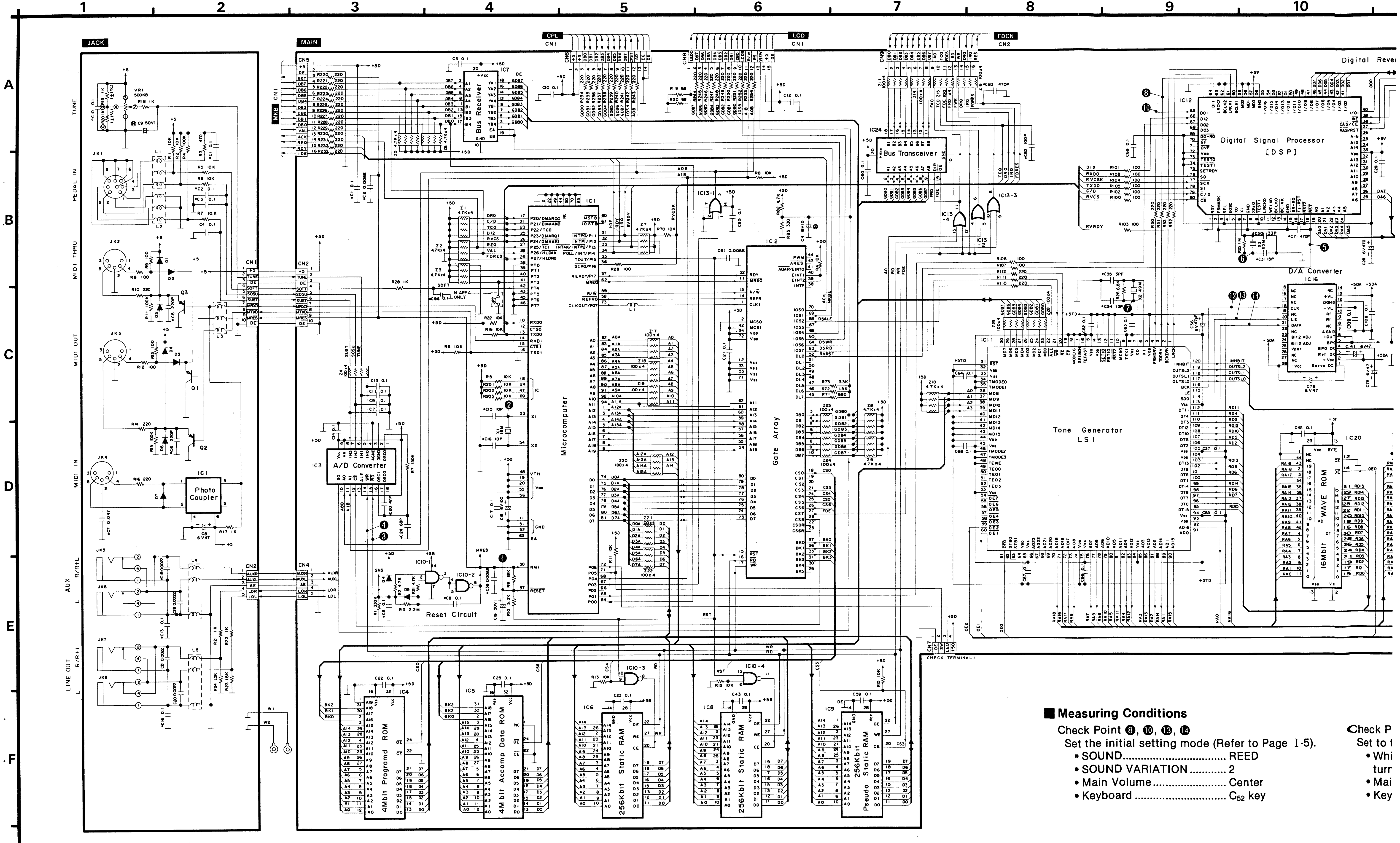
BLOCK DIAGRAM


MKB1 MKB2 MANUAL KEYBOARD CIRCUIT
Key Switches & Diodes
IC1 Gate Array
IC2 1Kbit ROM
DIGITAL DISK RECORDER
FDC FD CONTROL
FDCN FD CONNECTOR
CPL CONTROL PANEL LEFT CIRCUIT
IC1 Gate Array
Switches & LED'S
Q1~Q4 LED Driver
IC2, IC3 Buffer
VR1 MAIN VOLUME
CPR CONTROL PANEL RIGHT CIRCUIT
LCD LCD CIRCUIT
MUSICAL DISPLAY
IC1 Gate Array
Switches & LED'S
Q1~Q4 LED Driver
IC2~IC5 Buffer
CPSQ
JACK JACK CIRCUIT
VR1 TUNE
JK1 PEDAL IN
JK2 MIDI THRU
JK3 MIDI OUT
JK4 MIDI IN
IC1 Photo Coupler
JK5 R/R+L AUX IN
JK6 L
JK7 R/R+L LINE OUT
JK8 L
MAIN MAIN CIRCUIT
IC3
IC7 Bus Receiver
IC24 Bus Transceiver
IC1 Micro Computer
IC2 Gate Array
IC12 Digital Signal Processor (DSP)
IC14 256Kbit Dynamic RAM
IC15 256Kbit Dynamic RAM
IC11 Tone Generator LSI
IC16 D/A Converter
IC17 Panning Circuit
IC18-1 Mixing
IC18-2 Mixing
IC20 WAVE ROM (16Mbit)
IC21 WAVE ROM (16Mbit)
IC22 WAVE ROM (8Mbit)
IC4 4Mbit Program ROM
IC5 4Mbit Accomp Data ROM
IC6 256Kbit Static RAM
IC8 256Kbit Static RAM
IC9 256Kbit Pseudo Static RAM
IC27 +5V Regulator
IC26 -5V Regulator
D1~D3, C26 Memory Back-up Circuit
IC25-2 Lch AUX Amplifier
IC25-1 Rch AUX Amplifier
IC10-1, IC10-2, D4, D6 Reset Circuit
AS AMP & POWER SU
IC2, Q1 +5V Swit Regula
IC3 +15V Regu
IC4 -15V Regu
IC10-2 Low-Pass Filter
IC10-1 Low-Pass Filter
IC11 Dynamic Noise Reduction
Data Bus DB0~DB7
Address Bus
1 2 3 4 5 6 7 8 9 10
A B C D E F


5
6
7
8
9
10
11
12
13
14
Tone signal
Control signal
CPL CONTROL PANEL LEFT CIRCUIT
CPR CONTROL PANEL RIGHT CIRCUIT
LCD LCD CIRCUIT
MUSICAL DISPLAY
CPSQ SEQUENCER CONTROL CIRCUIT
IC1
Gate Array
Switches & LED'S
LED Driver
Q1~Q4
IC2, IC3
Buffer
IC2~IC5
VR1 MAIN VOLUME
SUML
DNRL
SUMR
DNRR
Data Bus
DB0~DB7
A0
CPST
CN1
CN2
CN3
AS CN9
AS CN7
ITAL
ECORDER
NTROL
CONNECTOR
S1 Power Switch
PC1 AC IN
TCF TRANS & FUSE CIRCUIT
JK1
Primary Circuit
POWER TRANSFORMER
FDCN CN1
AS AMP & POWER SUPPLY CIRCUIT
IC2, Q1
+5V Switching Regulator
IC3
+15V Regulator
IC4
-15V Regulator
D3~D10
Rectifier
D1
D2
+5D
+5T
+5V
+5TD
Q1
SNS
+15A
-15A
IC27
+5V Regulator
+5DA
IC26
-5V Regulator
-5DA
+5A
-5A
D7
D6
D1~D3, C26
Memory Back-up Circuit
+58
IC24
Bus Transceiver
DIR
OE
CN6
CN8
A0B
A1B
IC13-3
IC12
X3
Digital Signal Processor (DSP)
IC14
256Kbit Dynamic RAM
IC15
256Kbit Dynamic RAM
Address Bus DA0~DA7
CAS RAS WE
DQ1~DQ4
DD0~DD7
IC2
Gate Array
RVRST
D5WR
D5RD
D5ALE
DB0~DB7
A11~A19
A0~A3
IC11
Tone Generator LSI
IC16
D/A Converter
IC19-2
IC17
Panning Circuit
IC18-1
Mixing
IC18-2
Mixing
DATA
CLK
LE
INH
OUTSL0~OUTSL2
IC20
WAVE ROM (16Mbit)
IC21
WAVE ROM (16Mbit)
IC22
WAVE ROM (8Mbit)
RA0~RA19
RD0~RD15
DT0~DT15
X1
X2
X0
IC9
256Kbit Pseudo Static RAM
Kbit RAM
AMPL
AMPR
AUXL
AUXR
LOL
LOR
RES
IC25-2
Lch AUX Amplifier
IC25-1
Rch AUX Amplifier
IC10-1, IC10-2, D4, D6
Reset Circuit
MRES
IC10-2
Low-Pass Filter
IC10-1
Low-Pass Filter
IC11
Dynamic Noise Reduction
IC5-2
Lch Mixing
IC5-1
Rch Mixing
IC8-1, Q17~Q20
Equalizing Circuit
IC8-2, Q13~Q16
Equalizing Circuit
IC1-1
Power Amplifier (Lch)
IC1-2
Power Amplifier (Rch)
IC9-2, Q11, Q12
IC9-1, Q9, Q10
HPL
HPR
HPS
Q4~Q6
Reset & Muting Control Circuit
CN4
CN5
CN6
MTL
TWL
SPL
SPR
TWR
MTR
SP1 13cm x 6cm, 8Ω
SP5 6.5cm, 8Ω
SP3 16cm, 8Ω
SP4 16cm, 8Ω
SP6 6.5cm, 8Ω
SP2 13cm x 6cm, 8Ω
HP HEADPHONES
JK1
JK2
Headphones
LED
D1 Power Indicator

MAIN **JACK**

MAIN AND JACK CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
JACK
MAIN
TUNE
PEDAL IN
MIDI THRU
MIDI OUT
MIDI IN
AUX R/R+L L
LINE OUT R/R+L L
Photo Coupler
A/D Converter
IC3
Bus Receiver
IC7
Microcomputer
IC1
Gate Array
IC2
Bus Transceiver
IC24
Digital Signal Processor [DSP]
IC12
D/A Converter
IC16
Tone Generator LSI
IC11
16Mbit WAVE ROM
IC20
Reset Circuit
4Mbit Programd ROM
IC4
4M bit Accomp Data ROM
IC5
256Kbit Static RAM
IC6
IC8
Pseudo 256Kbit Static RAM
IC9
CPL CN1
LCD CN1
FDCN CN2
MKB CN1
(CHECK TERMINAL)
Digital Rever

■ Measuring Conditions

Check Point ❽, ❿, ⓭, ⓮

Set the initial setting mode (Refer to Page I-5).

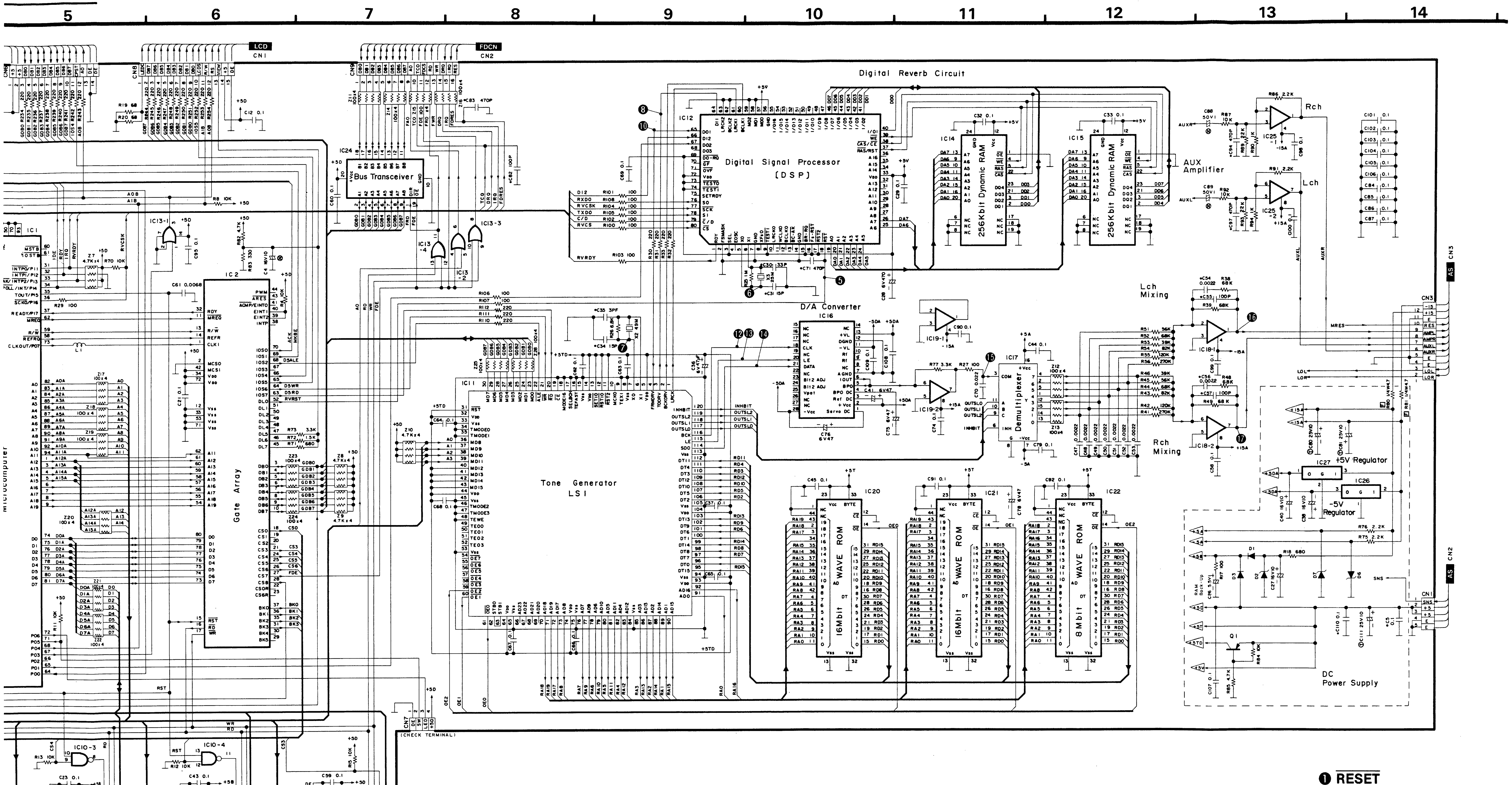
- SOUND.. REED
- SOUND VARIATION 2
- Main Volume......................... Center
- Keyboard .... C_{52} key

Check P

Set to t

- Whi
  turn
- Mai
- Key

.GRAM


5
6
7
8
9
10
11
12
13
14
LCD
CN1
FDCN
CN2
Digital Reverb Circuit
IC12
Digital Signal Processor (DSP)
IC14
256Kbit Dynamic RAM
IC15
256Kbit Dynamic RAM
AUX Amplifier
Rch
Lch
IC25
IC24
Bus Transceiver
IC13-1
IC13-2
IC13-3
IC13-4
IC1
Microcomputer
IC2
Gate Array
IC11
Tone Generator LSI
D/A Converter
IC16
IC19-1
IC19-2
IC17
Demultiplexer
Lch Mixing
Rch Mixing
IC18-1
IC18-2
IC27
+5V Regulator
IC26
-5V Regulator
IC20
16Mbit WAVE ROM
IC21
16Mbit WAVE ROM
IC22
8Mbit WAVE ROM
DC Power Supply
CN3
CN2
CN1
AS
CN7
(CHECK TERMINAL)
IC6
256Kbit Static RAM
IC8
256Kbit Static RAM
IC9
256Kbit Pseudo Static RAM
IC10-3
IC10-4
Q1
RAM Back-Up

■ Measuring Conditions

Check Point ❽, ❿, ⓭, ⓮

Set the initial setting mode (Refer to Page I-5).

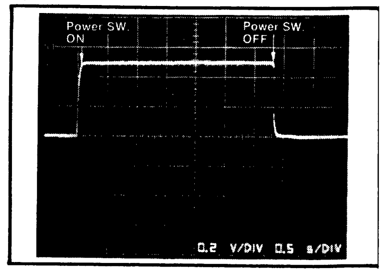
- SOUND................................. REED
- SOUND VARIATION 2
- Main Volume........................ Center
- Keyboard .... C_{52} key

Check Point ⓯~⓱

Set to the self-diagnostic mode followings.

- While pressing E_{44} key and E_{56} key simultaneously, turn on the power switch.
- Main Volume........................ Center
- Keyboard .... C_{52} key

❶ RESET



- Power Switch.................... ON → OFF

MAIN **JACK**

MAIN AND JACK CIRCUIT BOARD

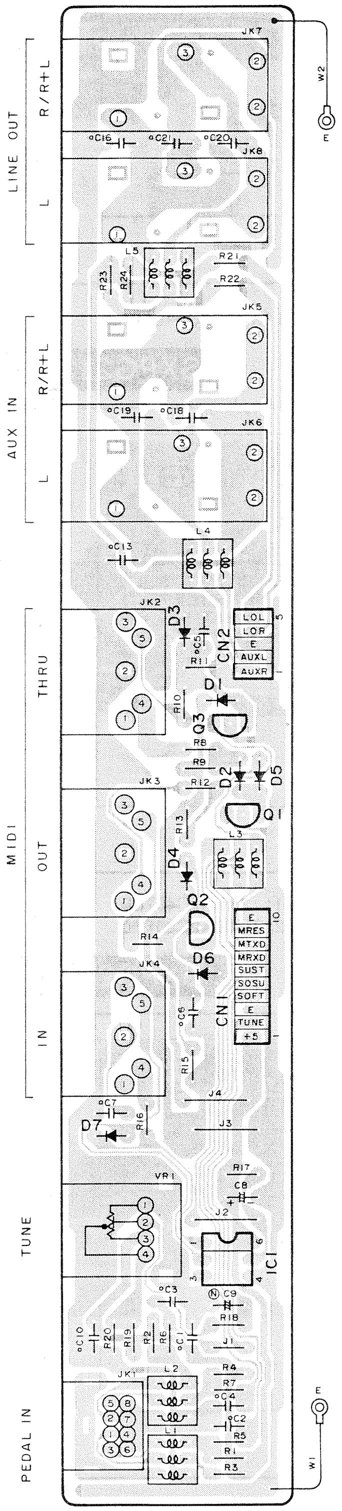
JACK

- [M] [MC] [XM] [EZ] Areas

SXPG209841

- Other Areas

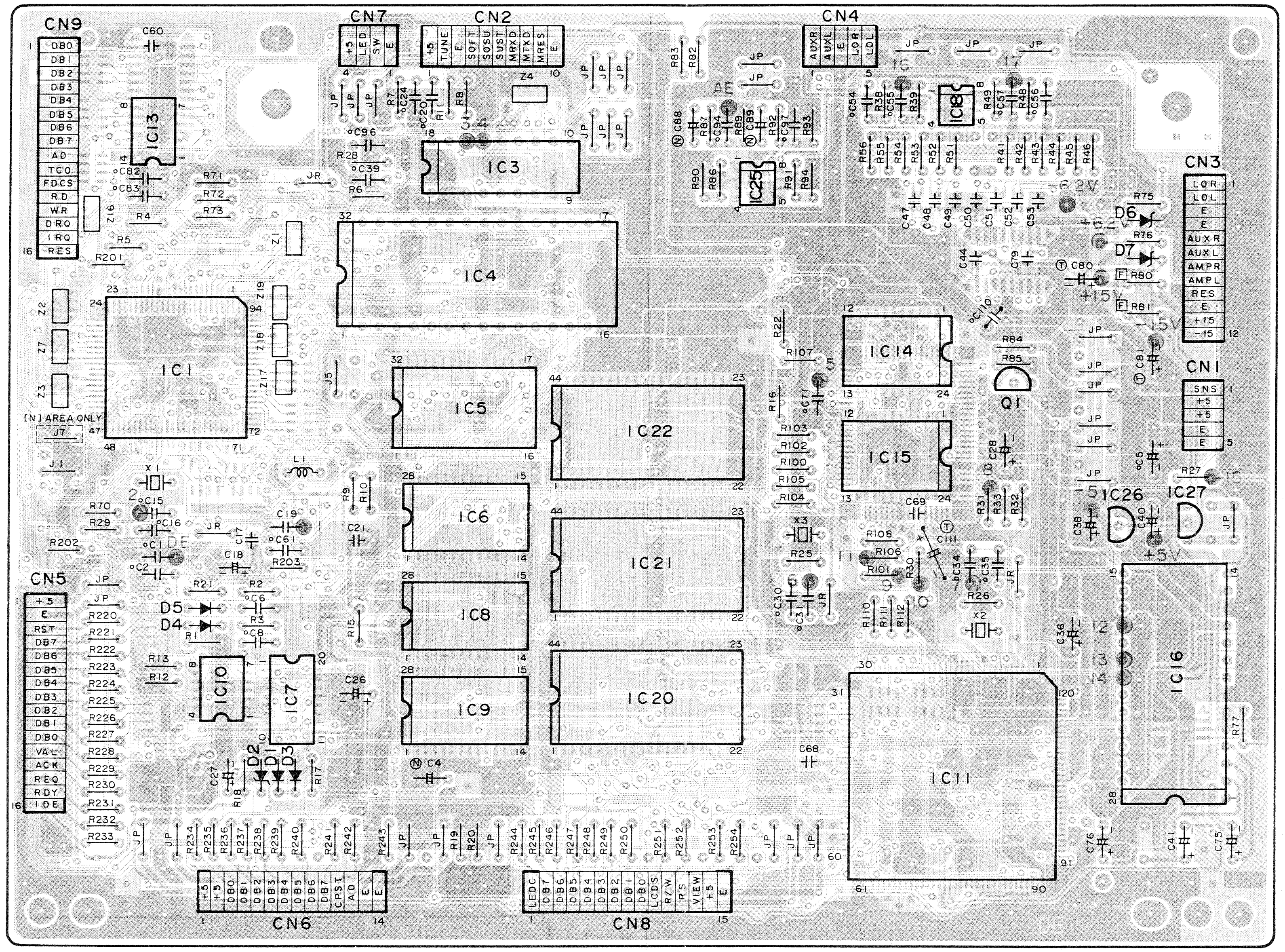
SXPG209831



JK7
JK8
JK5
JK6
JK2
JK3
JK4
JK1
LINE OUT
AUX IN
MIDI THRU
MIDI OUT
IN
TUNE
PEDAL IN
CN2
CN1
IC1
VR1
D1
D2
D3
D4
D5
D6
D7
Q1
Q2
Q3
W1
W2

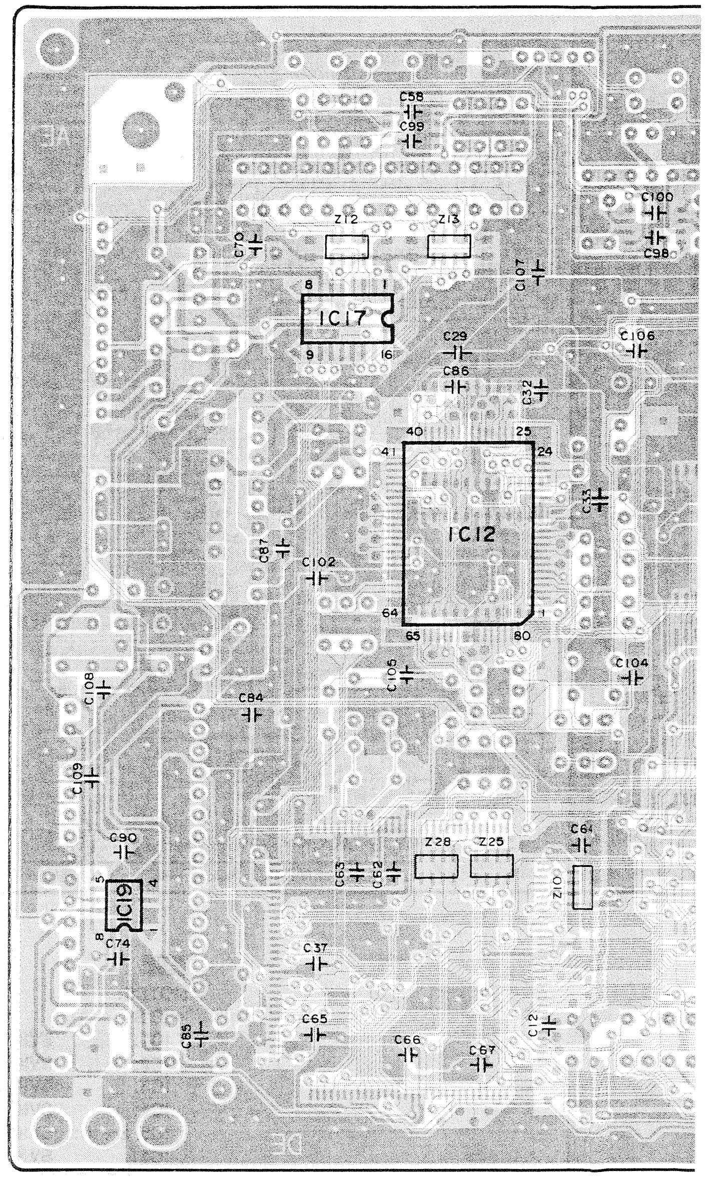
MAIN COMPONENT SIDE

Component Side
Foil Side



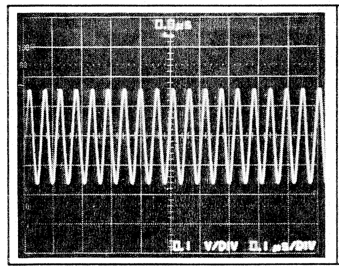
CN9
CN7
CN2
CN4
CN3
CN1
CN5
CN6
CN8
IC1
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC13
IC14
IC15
IC16
IC18
IC20
IC21
IC22
IC25
IC26
IC27
Q1
X1
X2
X3
-6.2V
+15V
-15V
+5V
-5
[N] AREA ONLY

MAIN FOIL SIDE

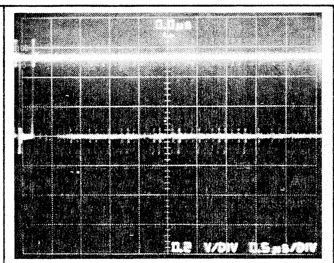


IC12
IC17
IC19
Z12
Z13
Z28
Z25

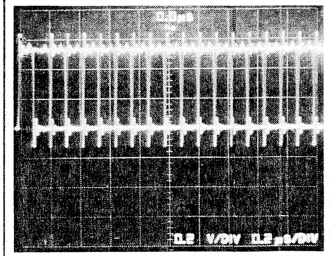
② **X1, 18MHz**



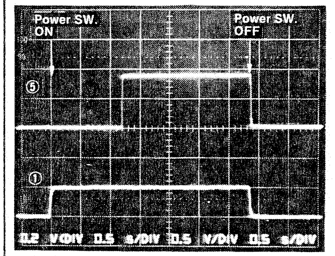
③ **RD**



④ **WR**

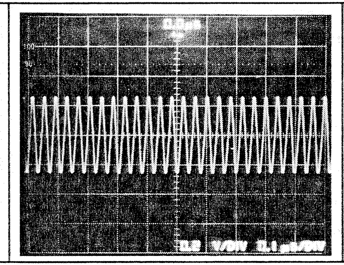


⑤ **RVRST**

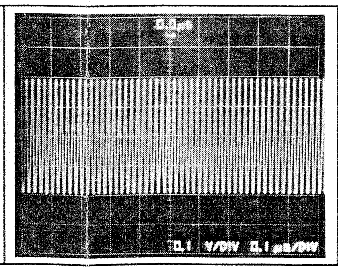


- Power Switch..................... ON → OFF

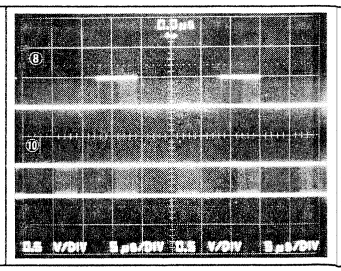
⑥ **X3, 25MHz**



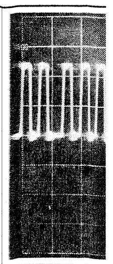
⑦ **X2, 49.195MHz**



⑧, ⑩



⑫



OARD

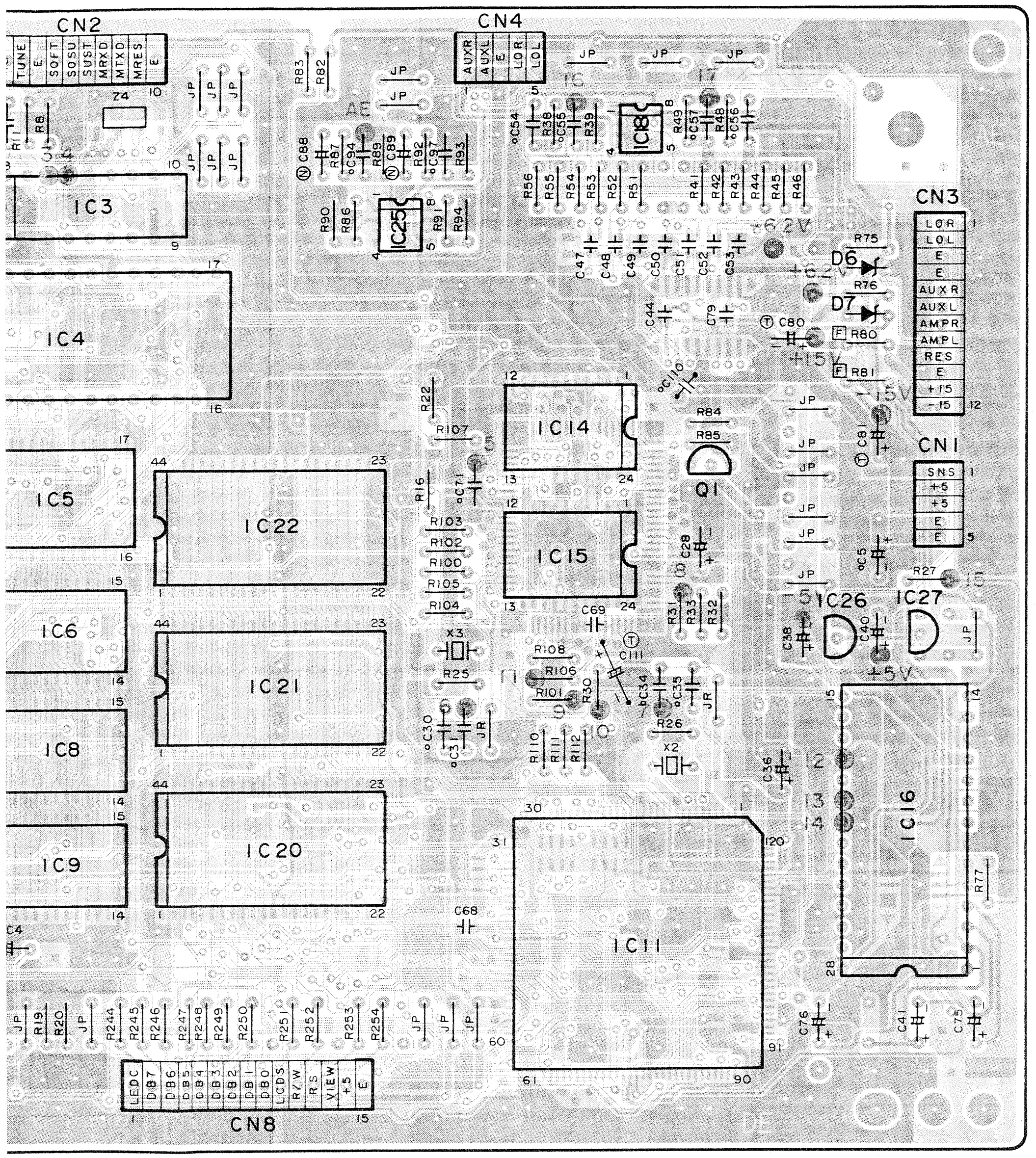
5 6 7 8 9 10 11 12 13 14

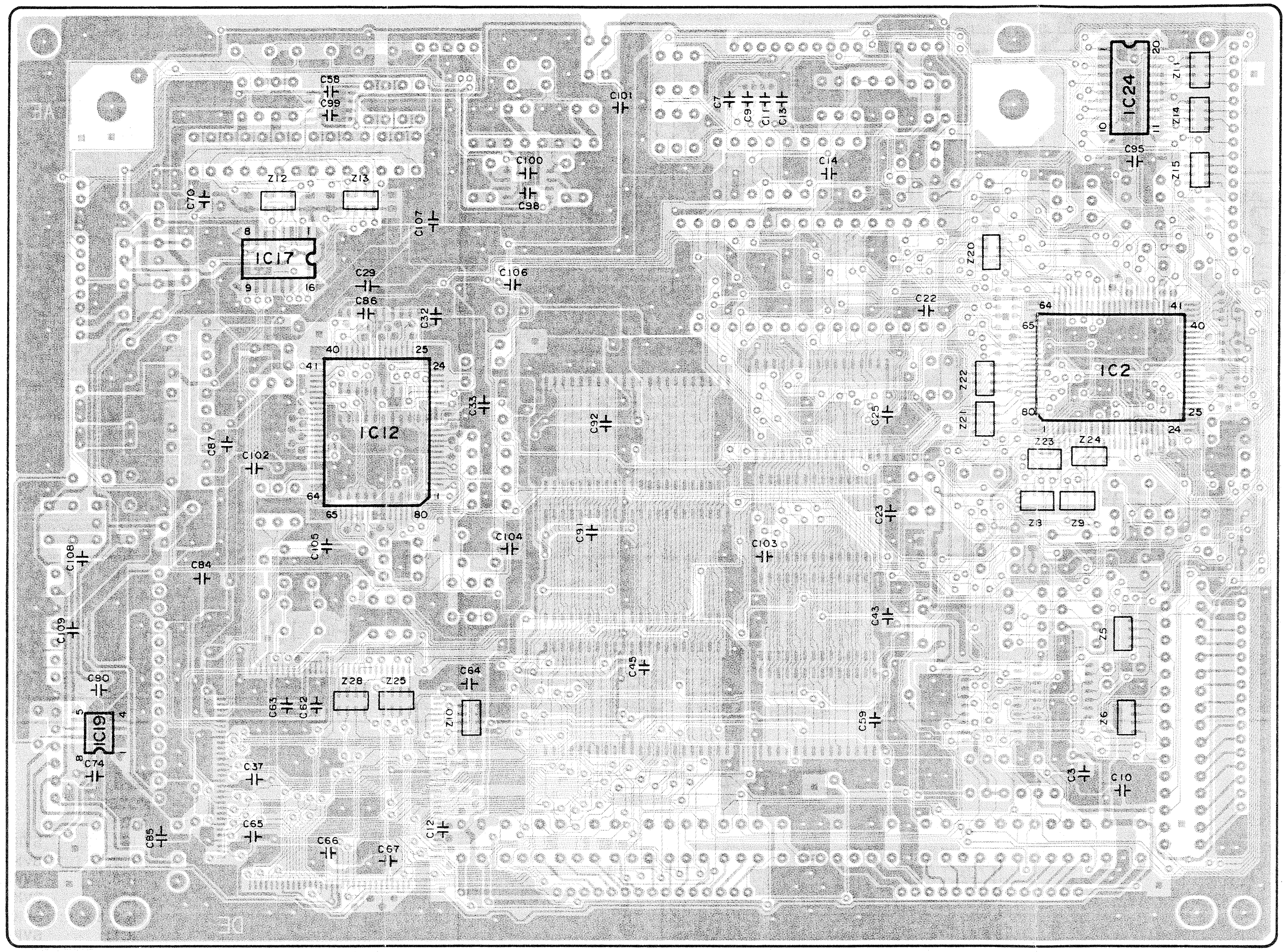
Component Side
Foil Side

MAIN **FOIL SIDE**

• [M] [MC] [XM] [EZ] areas **SXPG211491**

• Other areas **SXPG211461**


CN2
CN4
CN3
CN1
CN8
IC3
IC4
IC5
IC6
IC8
IC9
IC11
IC14
IC15
IC16
IC20
IC21
IC22
IC25
IC26
IC27
Q1
X2
X3
D6
D7
+6.2V
+15V
-15V
+5V
TUNE
SOFT
SOSU
SUST
MTXD
MRES
AUXR
AUXL
LOR
LOL
AMPR
AMPL
RES
SNS
LEDC
VIEW
R/W
RS


IC2
IC12
IC17
IC19
IC24
Z12
Z13
Z14
Z15
Z20
Z21
Z22
Z23
Z24
Z25
Z28
Z8
Z9
Z6
AE
DE

MAIN

NOTES:

• IC'S

IC1:	D70325GJ-10
IC2:	D65012GF-A79
IC3:	SVIGMSM6253
IC4:	QSIGCR370AX0
IC5:	QSIGH3C04C21
IC6, 8:	ATT7C256BF85
IC7:	M74HC244FP
IC9:	HM65256BLF10
IC10:	M74HC00FP
IC11:	TC25540AF006
IC12:	D6382GF-3B9
IC13:	M74HC32FP
IC14, 15:	MN41464AS-08
IC16:	PCM63P
IC17:	T74H4051AF
IC18, 25:	M5218AFP
IC19:	M5238FP
IC20:	QSIGH3C16C51
IC21:	QSIGH3C16C52
IC22:	D23C8000B803
IC24:	M74HC245FP
IC26:	M5279L05
IC27:	SVIGM5278L05

• TRANSISTOR

Q1:	2SA1534ARS

• DIODES

D1, 3~5:	MA165TA5
D2:	MA4051NTA
D6, 7:	MA4062

JACK

NOTES:

• IC

IC1:	SVIGTLP513

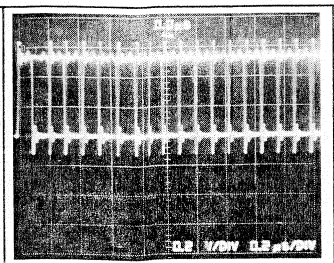
• TRANSISTOR

Q1~3:	2SA1015-GR

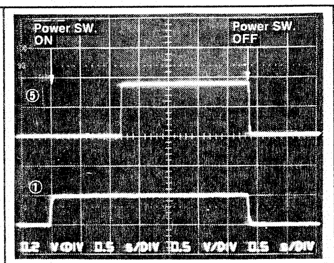
• DIODES

D1~7:	MA165TA5

④ WR

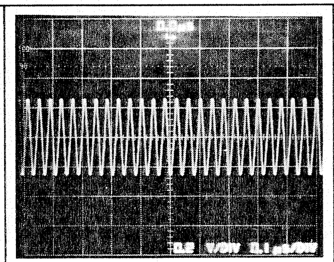


⑤ RVRST

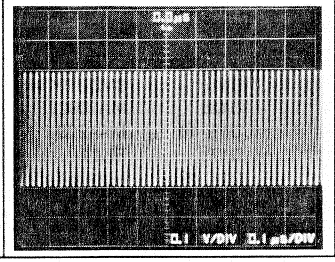


• Power Switch.................... ON → OFF

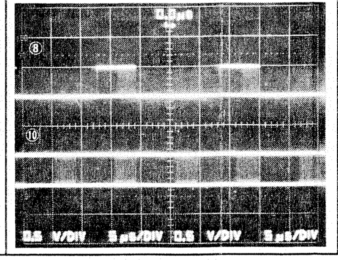
⑥ X3, 25MHz



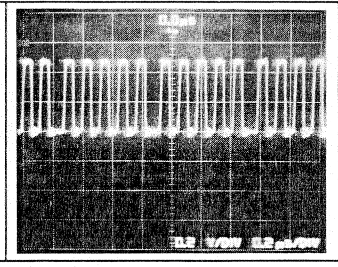
⑦ X2, 49.195MHz



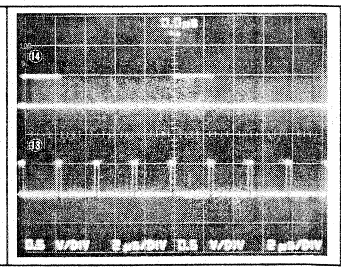
⑧, ⑩



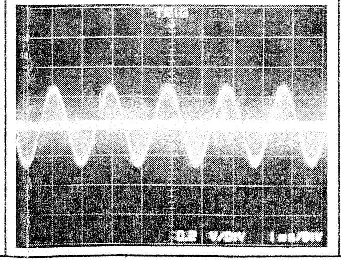
⑫



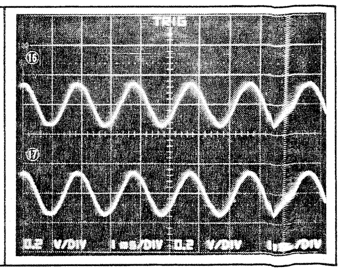
⑬, ⑭



⑮



⑯, ⑰



AS TCF HP AMP & POWER SUPPLY, TRANSFORMER & FUSE AND HEADPHONE CIRCUIT BOARD

1 2 3 4 5 6 7 8 9 10

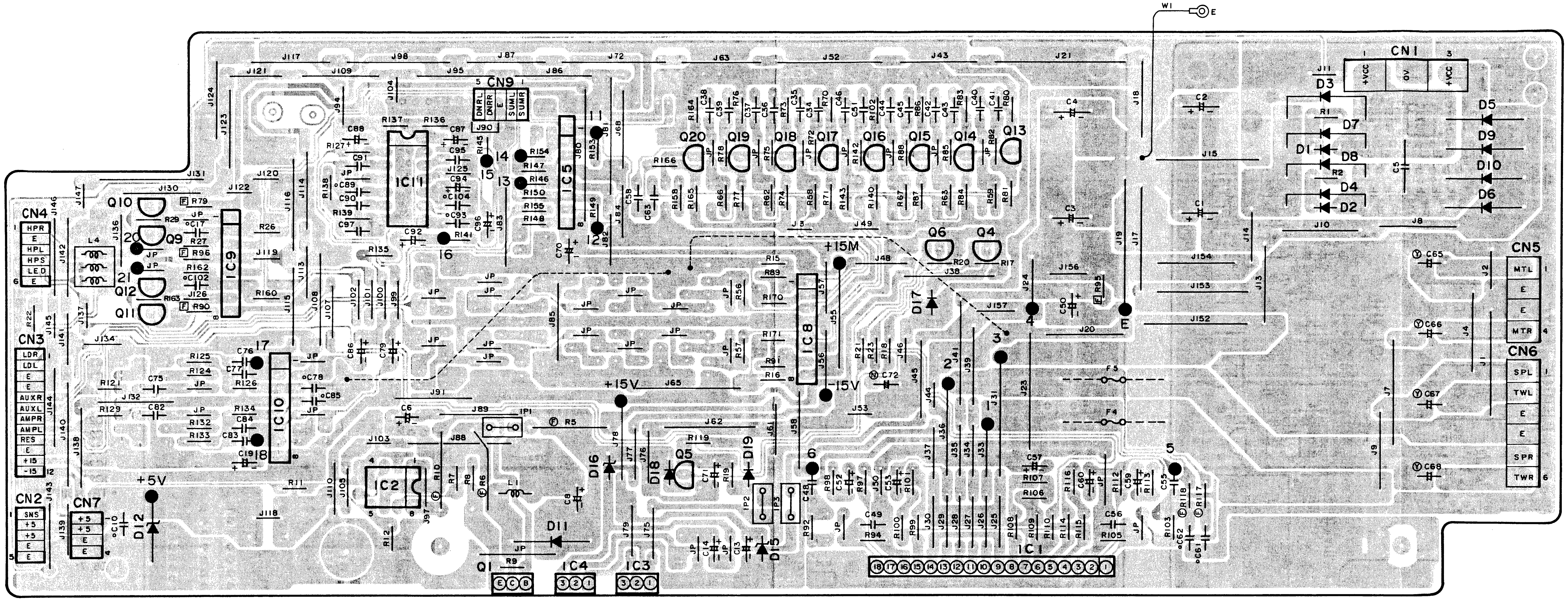
A B C D E F

AS

• [M] [MC] [XM] areas **SXPG211871**

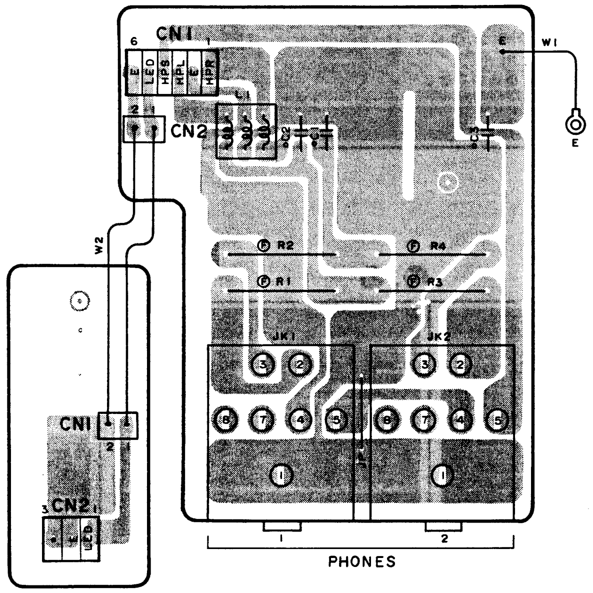
• [EZ] area **SXPG211881**

• Other areas **SXPG211851**



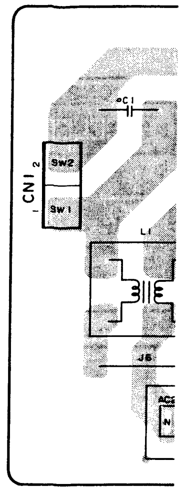
CN1
+VCC
0V
+VCC
CN2
SNS
+5
+5
E
E
CN3
LDR
LDL
E
E
AUXR
AUXL
AMPR
AMPL
RES
E
+15
-15
CN4
HPR
E
HPL
HPS
LED
E
CN5
MTL
E
E
MTR
CN6
SPL
TWL
E
E
SPR
TWR
CN7
CN9
DNRL
DNRR
E
SUML
SUMR
IC1
IC2
IC3
IC4
IC5
IC8
IC9
IC10
IC11
Q1
Q4
Q5
Q6
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D15
D16
D17
D18
D19
F4
F5
L1
L4
IP1
IP2
IP3
W1
E
+5V
+15V
-15V
+15M

HP **SXPG210831**



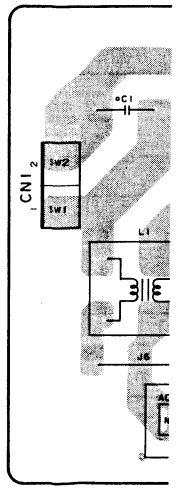
CN1
CN2
W1
W2
E
LED
HPS
HPL
HPR
R1
R2
R3
R4
JK1
JK2
CN1
CN2
PHONES
1
2

TCF [M



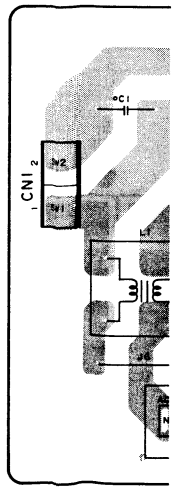
CN1
SW2
SW1
L1

TCF [E



CN1
SW2
SW1
L1

TCF Ot



CN1
SW2
SW1
L1

AS

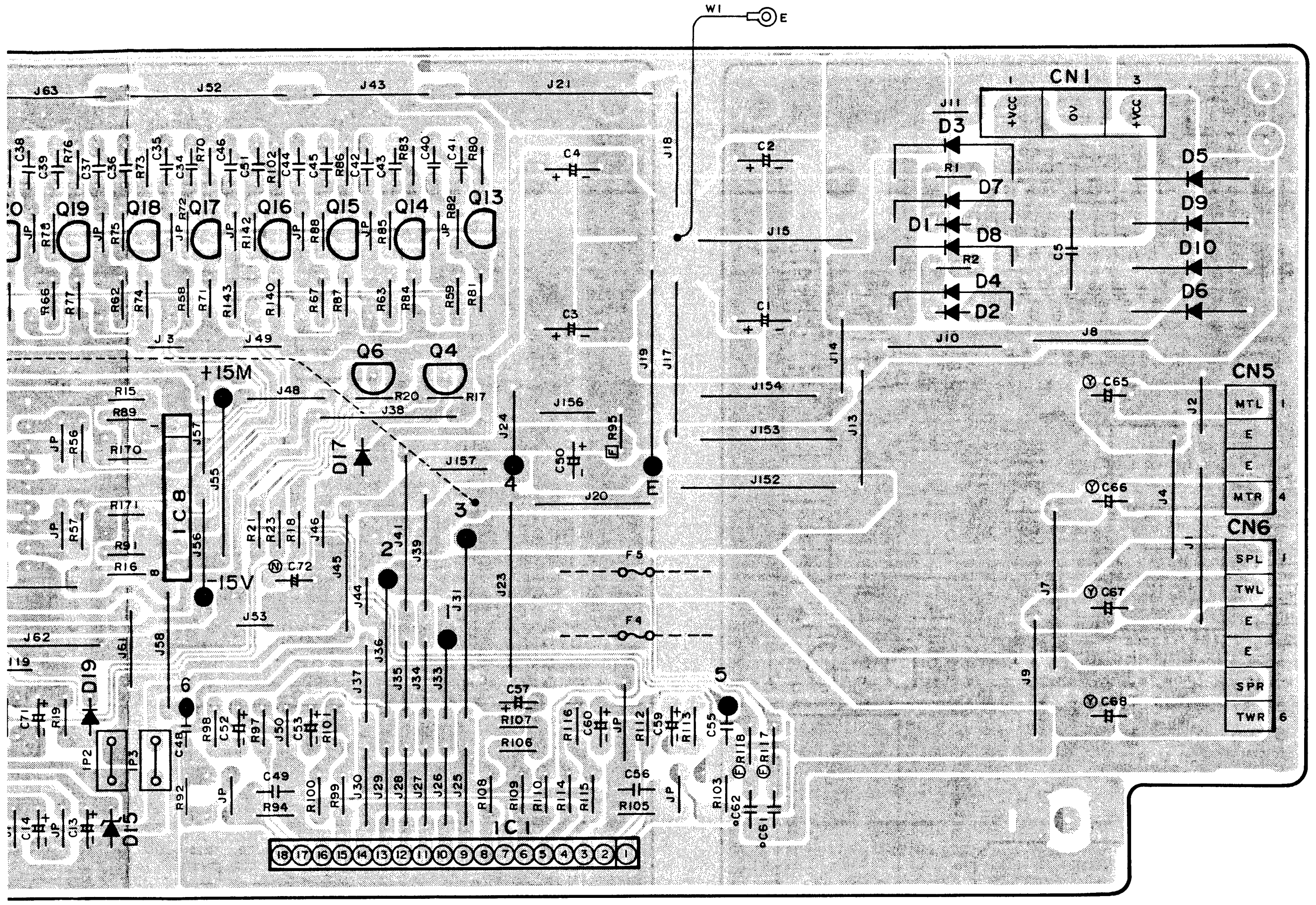
NOTES:

- IC'S
  - IC1: SVIGS4172M2M
  - IC2: SVIGM5291P
  - IC3: SVIGM5F7815
  - IC4: SVIGM5F7915
  - IC5, 8~10: SVIGM5218L
  - IC11: SVIGLM1894N
- TRANSISTORS
  - Q1: 2SA1643
  - Q4, 6, 13~20: 2SA1015-GR
  - Q5: 2SC1815GR
  - Q9, 12: 2SA1534ARS
  - Q10, 11: 2SC3940ARS
- DIODES
  - D1, 2: SVDGERA1502
  - D3~10: SVDGS3V20
  - D11: SVDGRK14S
  - D12: MA2062LF
  - D15, 16: MA4200
  - D17: EK04
  - D18, 19: MA165TA5
- FUSES
  - F4, 5: XBA1C50NU100 **M** **MC** **XM**
  - F4, 5: XBA2C40TB0 **Others**

RANSFORMER & FUSE AND HEADPHONE CIRCUIT BOARD

5 6 7 8 9 10 11 12 13 14

- [EZ] area **SXPG211881**
- Other areas **SXPG211851**



W1
E
CN1
+VCC
0V
+VCC
J63
J52
J43
J21
J18
J15
J11
D3
D7
D1
D8
D4
D2
D5
D9
D10
D6
R1
R2
C2
C4
C5
C1
C3
J10
J8
Q19
Q18
Q17
Q16
Q15
Q14
Q13
Q6
Q4
+15M
-15V
IC8
IC1
D17
D19
D15
J19
J17
J14
J13
J154
J153
J152
J156
J157
J20
J24
J23
J31
F5
F4
CN5
MTL
E
E
MTR
CN6
SPL
TWL
E
E
SPR
TWR
C65
C66
C67
C68
J2
J4
J1
J7
J9
1
2
3
4
5
6
E
18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

AS

NOTES:

- IC'S

IC1:	SVIGS4172M2M
IC2:	SVIGM5291P
IC3:	SVIGM5F7815
IC4:	SVIGM5F7915
IC5, 8～10:	SVIGM5218L
IC11:	SVIGLM1894N

- TRANSISTORS

Q1:	2SA1643
Q4, 6, 13～20:	2SA1015-GR
Q5:	2SC1815GR
Q9, 12:	2SA1534ARS
Q10, 11:	2SC3940ARS

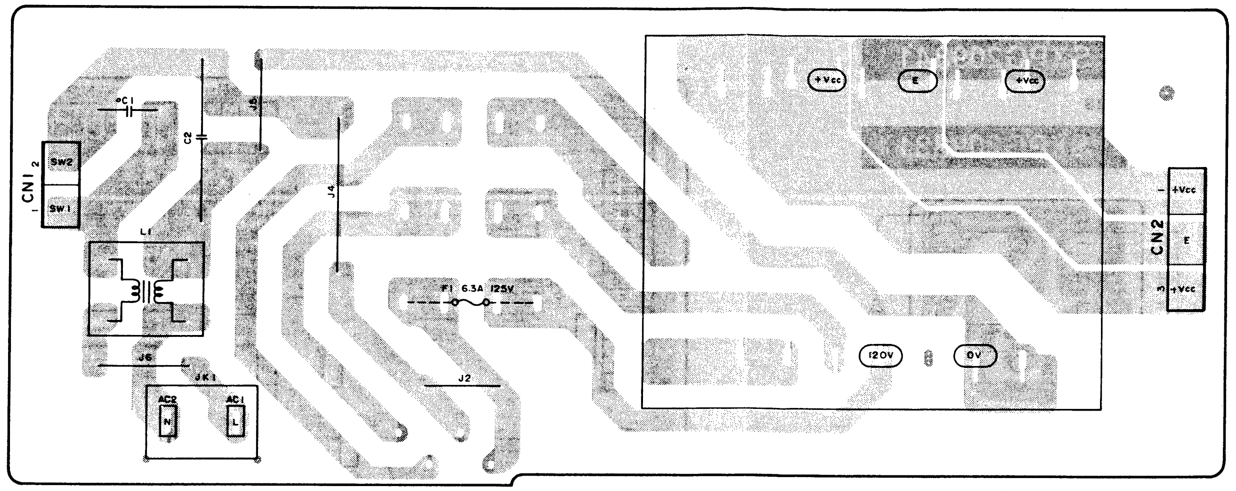
- DIODES

D1, 2:	SVDGERA1502
D3～10:	SVDGS3V20
D11:	SVDGRK14S
D12:	MA2062LF
D15, 16:	MA4200
D17:	EK04
D18, 19:	MA165TA5

- FUSES

F4, 5: **M** **MC** **XM**	XBA1C50NU100
F4, 5: **Others**	XBA2C40TB0

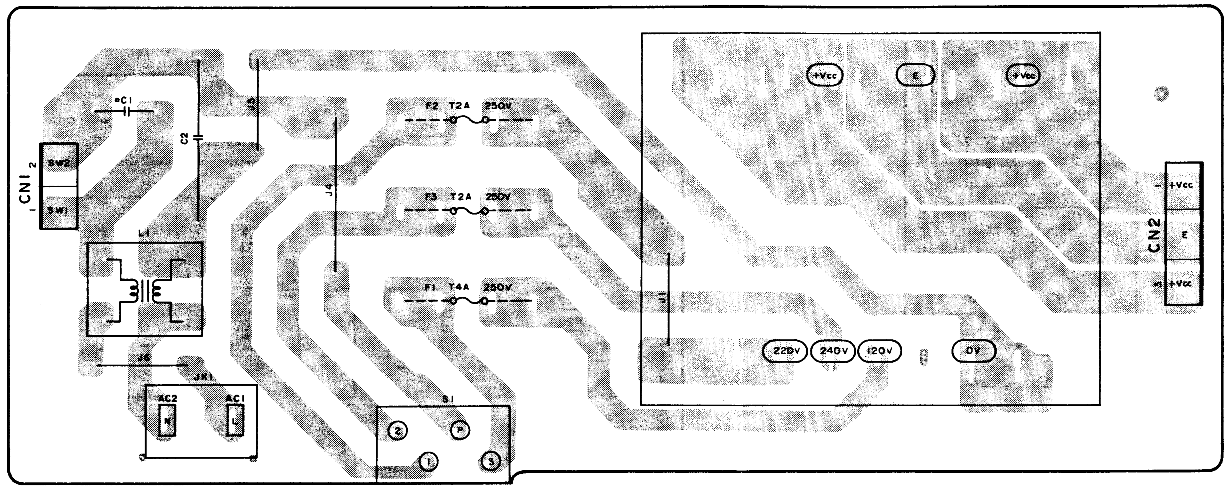
TCF [M] [MC] [XM] areas **SXPG212831**



CN1
SW2
SW1
C1
C2
J5
J4
L1
F1 6.3A 125V
J6
JK1
AC2
AC1
J2
+VCC
E
+VCC
CN2
120V
0V

- FUSE F1: XBA1C63NU100

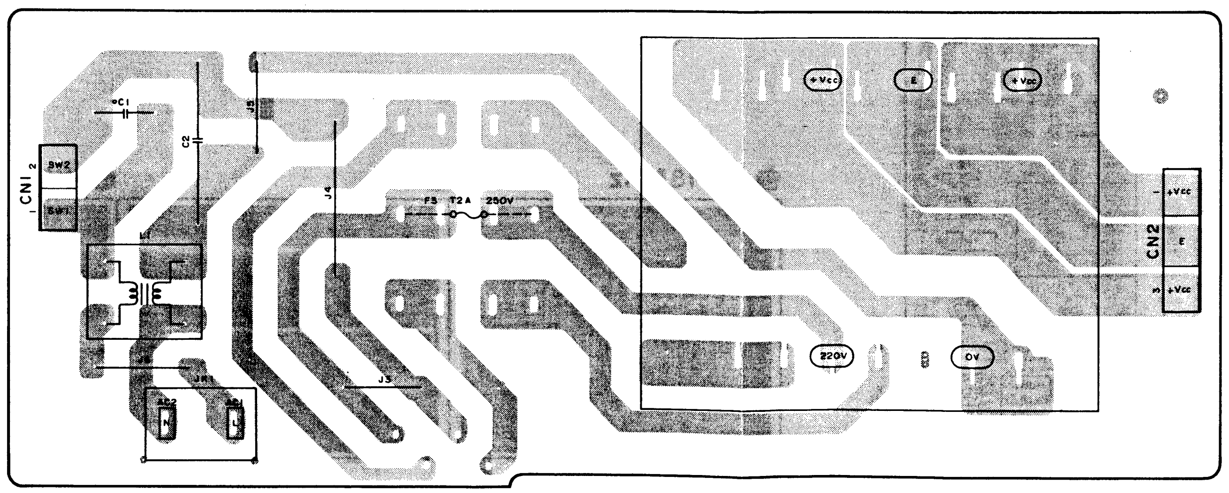
TCF [EK] [X] [XR] [XS] [XT] [XD] areas **SXPG212841**



CN1
SW2
SW1
C1
C2
J5
J4
L1
F2 T2A 250V
F3 T2A 250V
F1 T4A 250V
J1
J6
JK1
AC2
AC1
S1
+VCC
E
+VCC
CN2
220V
240V
120V
0V

- FUSE F1: XBA2C40TB0
  F2, 3: XBA2C20TB0

TCF Other areas **SXPG212811**

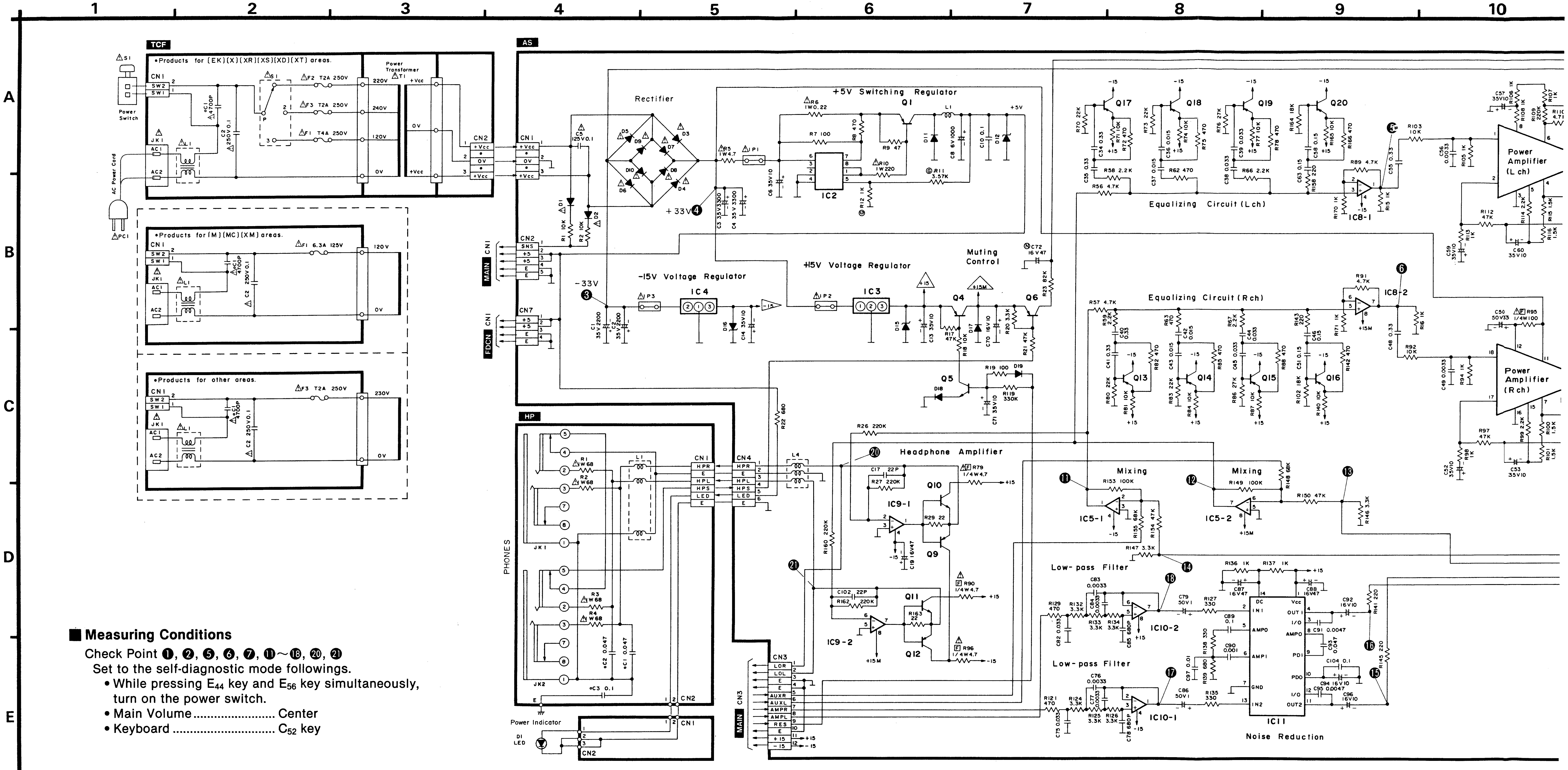


CN1
SW2
SW1
C1
C2
J5
J4
L1
F3 T2A 250V
J3
JK1
AC2
AC1
+VCC
E
+VCC
CN2
220V
0V

- FUSE F1: XBA2C20TB0

AS **TCF** **HP**

AMP & POWER SUPPLY, TRANSFORMER & FUSE AND HEADPHONE CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
TCF
•Products for (EK)(X)(XR)(XS)(XD)(XT) areas.
Power Switch
AC Power Cord
Power Transformer
220V
240V
120V
0V
+Vcc
T2A 250V
T4A 250V
•Products for (M)(MC)(XM) areas.
6.3A 125V
•Products for other areas.
230V
AS
Rectifier
+5V Switching Regulator
IC2
+33V ❹
-33V ❸
-15V Voltage Regulator
IC4
+15V Voltage Regulator
IC3
Muting Control
Q1
Q4
Q5
Q6
Q17
Q18
Q19
Q20
Q13
Q14
Q15
Q16
Equalizing Circuit (Lch)
Equalizing Circuit (Rch)
IC8-1
IC8-2
Power Amplifier (L ch)
Power Amplifier (R ch)
MAIN CN1
FDCN CN1
HP
PHONES
JK1
JK2
Power Indicator
D1 LED
Headphone Amplifier
IC9-1
IC9-2
Q9
Q10
Q11
Q12
Mixing
IC5-1
IC5-2
Low-pass Filter
IC10-1
IC10-2
IC11
Noise Reduction
MAIN CN3

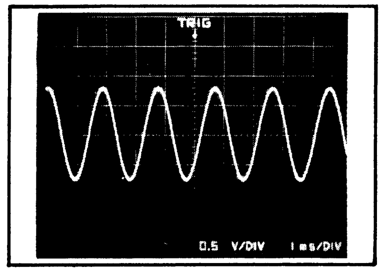
■ Measuring Conditions

Check Point ❶, ❷, ❺, ❻, ❼, ⓫~⓲, ⓴, ㉑

Set to the self-diagnostic mode followings.

- While pressing E_{44} key and E_{56} key simultaneously, turn on the power switch.
- Main Volume........................ Center
- Keyboard .... C_{52} key

❶



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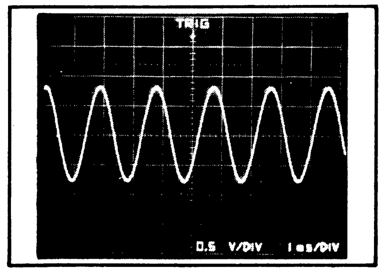

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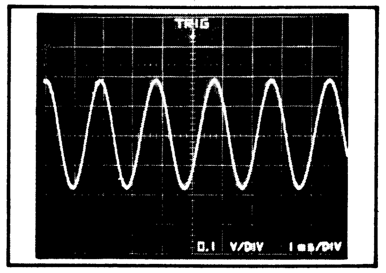

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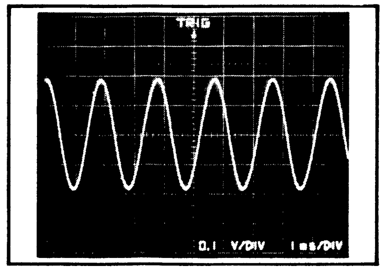

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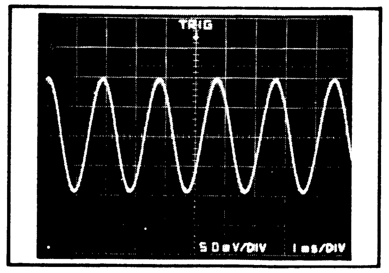

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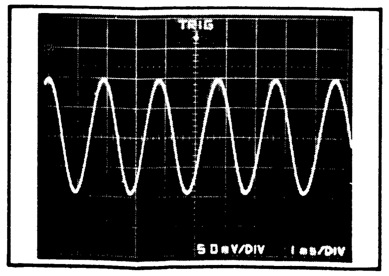

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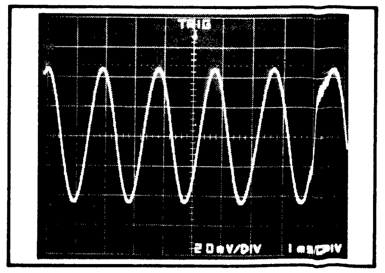
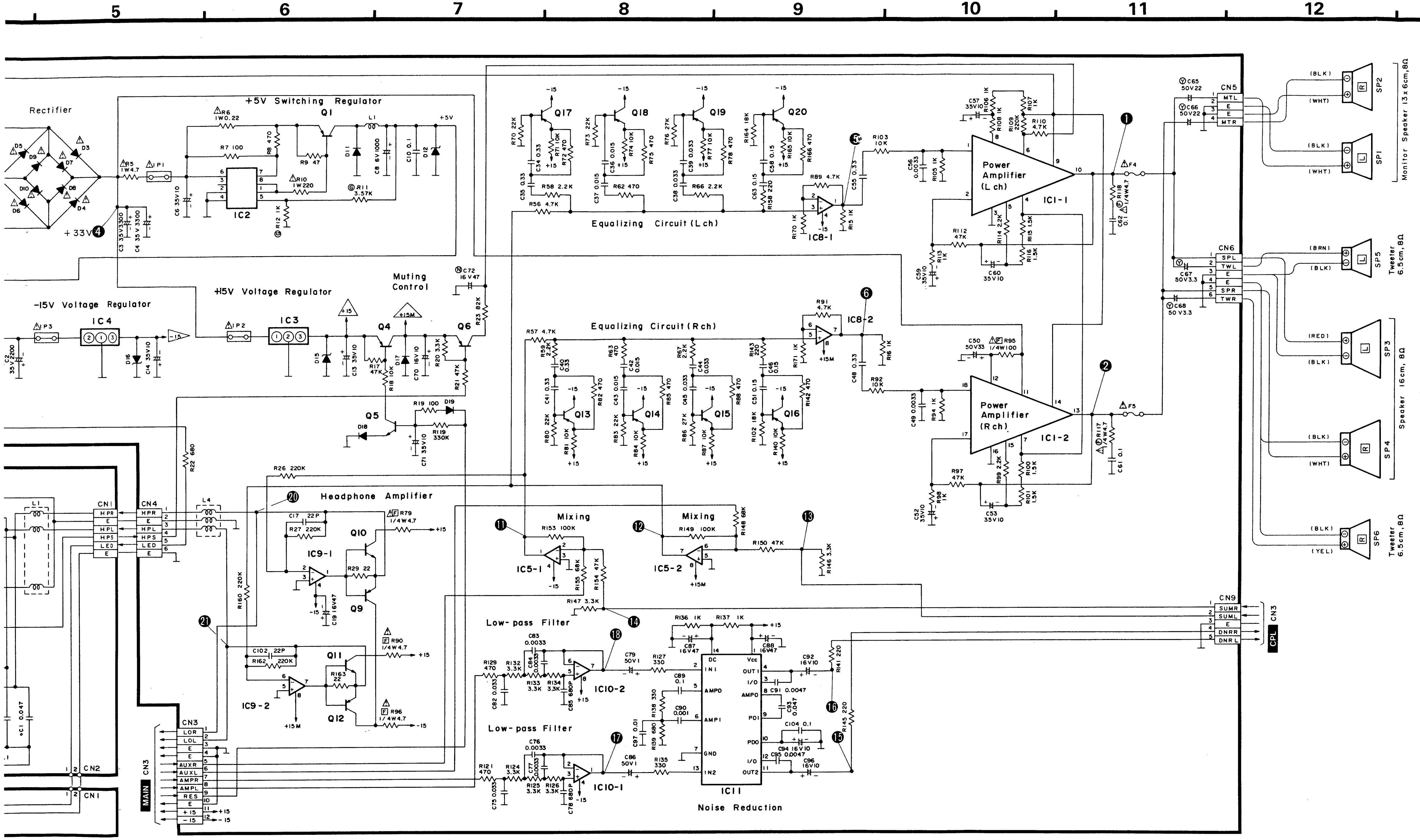
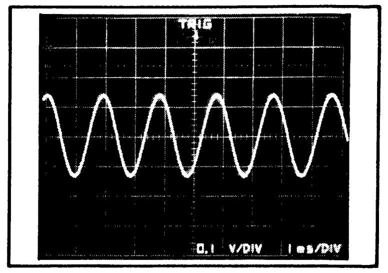


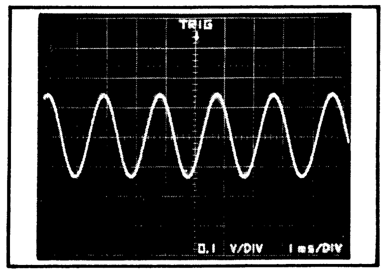
ANSFORMER & FUSE AND HEADPHONE CIRCUIT DIAGRAM


5
6
7
8
9
10
11
12
13
14
Rectifier
+5V Switching Regulator
Q1
IC2
+33V ④
-15V Voltage Regulator
IC4
+15V Voltage Regulator
IC3
Muting Control
Q4
Q5
Q6
Q17
Q18
Q19
Q20
Equalizing Circuit (Lch)
Equalizing Circuit (Rch)
Q13
Q14
Q15
Q16
IC8-1
IC8-2
Power Amplifier (L ch)
IC1-1
Power Amplifier (R ch)
IC1-2
①
②
⑥
ΔF4
ΔF5
CN5
MTL
E
E
MTR
CN6
SPL
TWL
E
E
SPR
TWR
SP2
SP1
Monitor Speaker 13x6cm, 8Ω
SP5
Tweeter 6.5cm, 8Ω
SP3
SP4
Speaker 16cm, 8Ω
SP6
Tweeter 6.5cm, 8Ω
(BLK)
(WHT)
(BRN)
(RED)
(YEL)
Headphone Amplifier
IC9-1
IC9-2
Q9
Q10
Q11
Q12
⑳
㉑
Mixing
IC5-1
IC5-2
⑪
⑫
⑬
⑭
Low-pass Filter
IC10-1
IC10-2
⑰
⑱
IC11
Noise Reduction
⑮
⑯
CN1
CN2
CN3
CN4
CN9
SUMR
SUML
E
DNRR
DNRL
CPL
MAIN
LOR
LOL
AUXR
AUXL
AMPR
AMPL
RES
+15
-15
HPR
HPL
HPS
LED

⑯



⑰



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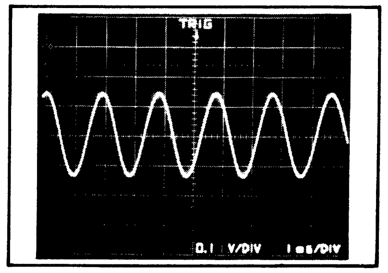
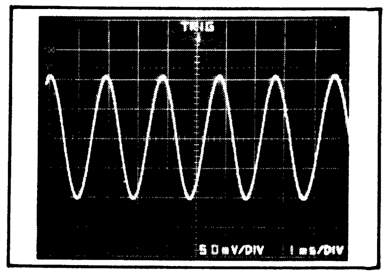
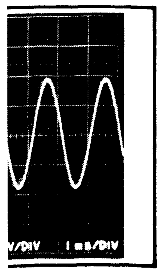


⑳





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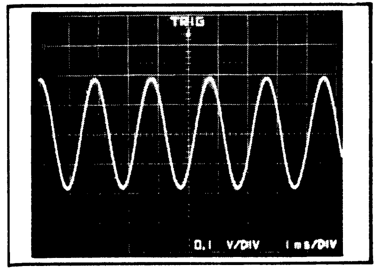

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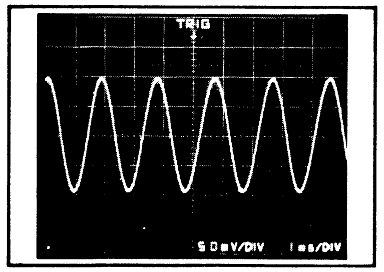

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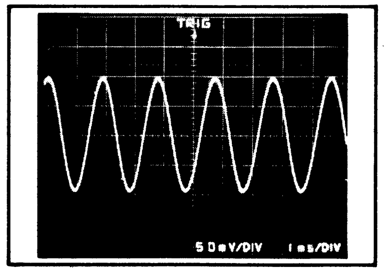

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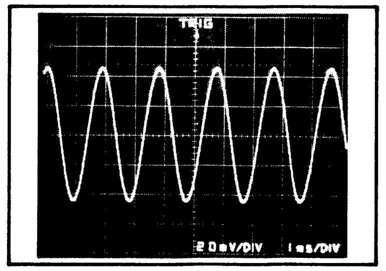

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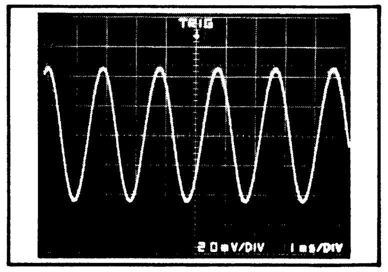

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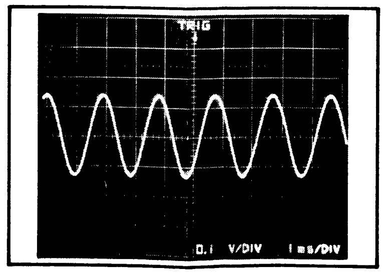

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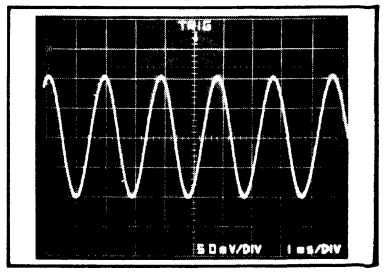
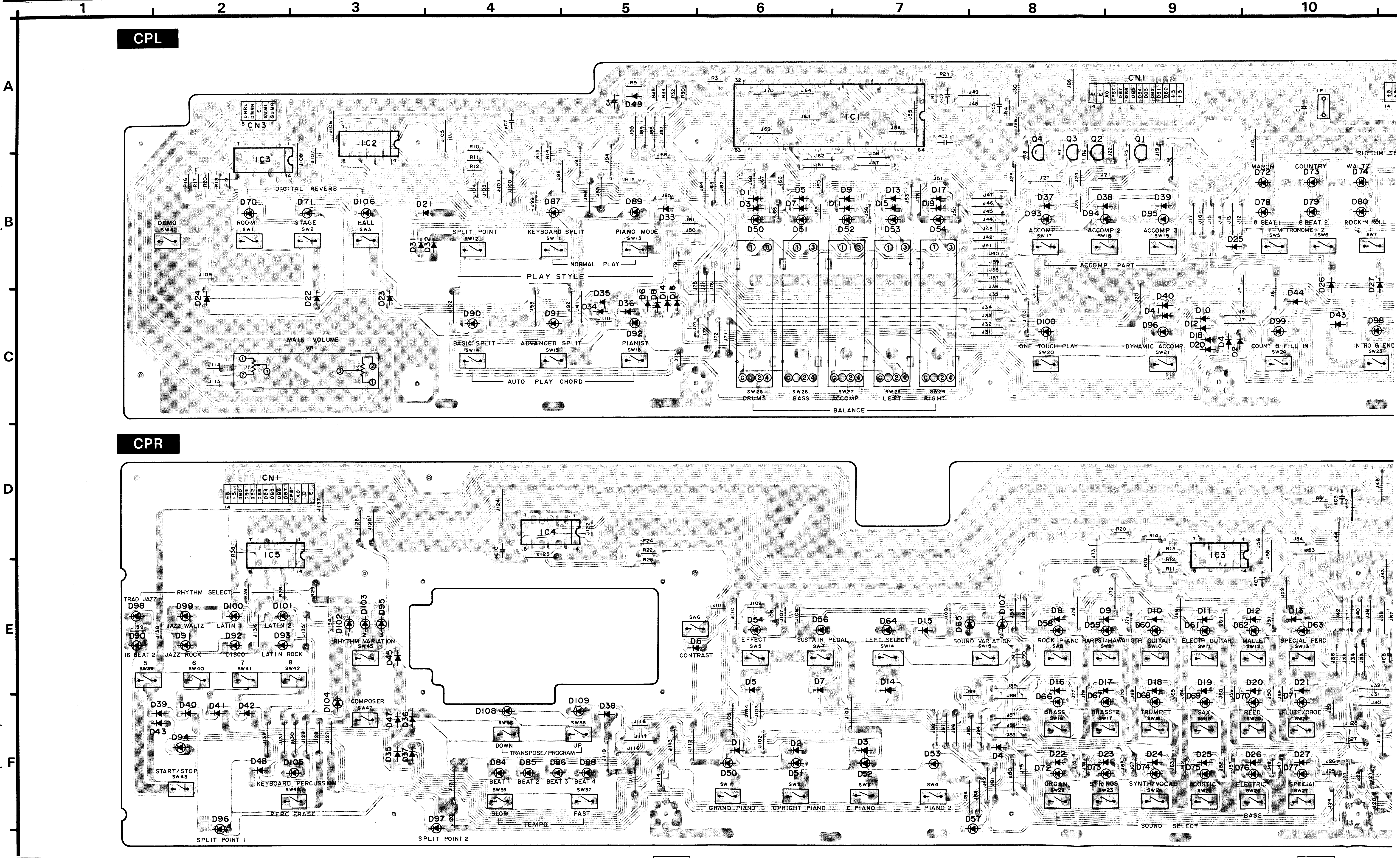
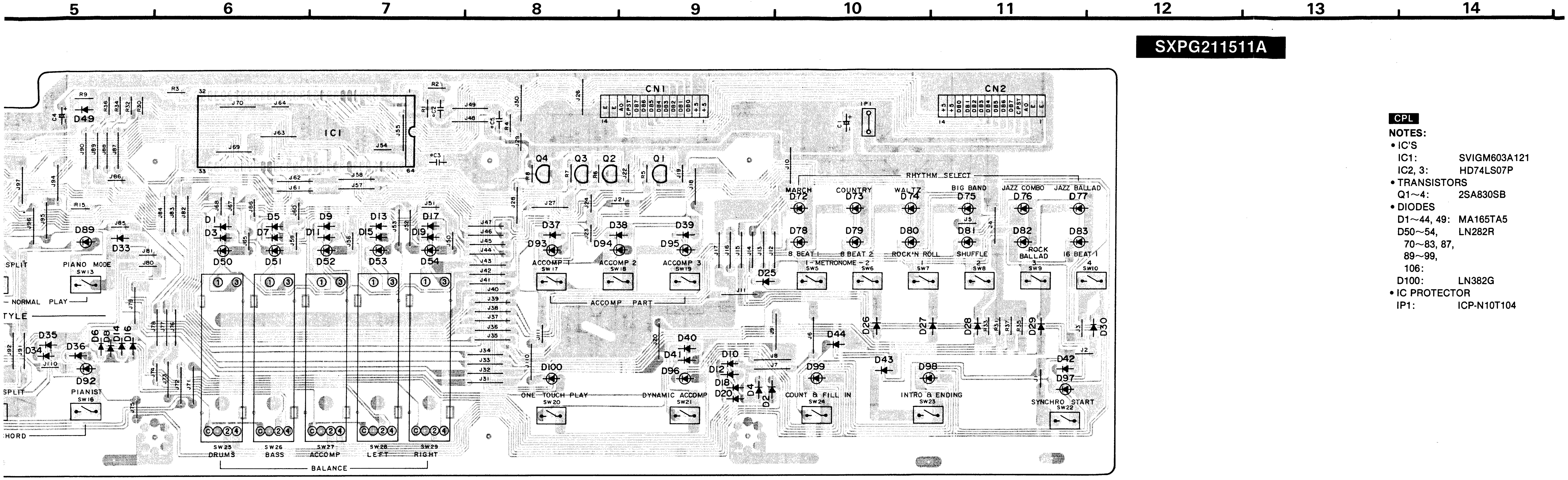


CPL CPR CONTROL PANEL LEFT AND RIGHT CIRCUIT BOARD



1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
CPL
CN3
IC3
IC2
IC1
CN1
DIGITAL REVERB
DEMO SW4
ROOM SW1
STAGE SW2
HALL SW3
SPLIT POINT SW12
KEYBOARD SPLIT SW11
PIANO MODE SW13
NORMAL PLAY
PLAY STYLE
BASIC SPLIT SW14
ADVANCED SPLIT SW15
PIANIST SW16
AUTO PLAY CHORD
MAIN VOLUME VR1
SW25 DRUMS
SW26 BASS
SW27 ACCOMP
SW28 LEFT
SW29 RIGHT
BALANCE
ACCOMP 1 SW17
ACCOMP 2 SW18
ACCOMP 3 SW19
ACCOMP PART
ONE TOUCH PLAY SW20
DYNAMIC ACCOMP SW21
RHYTHM SE
MARCH
COUNTRY
WALTZ
8 BEAT 1
8 BEAT 2
ROCK'N ROLL
1 - METRONOME - 2
COUNT & FILL IN SW24
INTRO & END SW23
CPR
IC4
IC5
RHYTHM SELECT
TRAD JAZZ
JAZZ WALTZ
LATIN 1
LATIN 2
16 BEAT 2
JAZZ ROCK
DISCO
LATIN ROCK
SW39
SW40
SW41
SW42
RHYTHM VARIATION SW45
START/STOP SW43
KEYBOARD PERCUSSION SW46
PERC ERASE
COMPOSER SW47
DOWN SW36
UP SW38
TRANSPOSE/PROGRAM
BEAT 1
BEAT 2
BEAT 3
BEAT 4
SLOW SW35
FAST SW37
TEMPO
SPLIT POINT 1
SPLIT POINT 2
SW6 CONTRAST
EFFECT SW5
SUSTAIN PEDAL SW7
LEFT SELECT SW14
SOUND VARIATION SW15
GRAND PIANO SW1
UPRIGHT PIANO SW2
E PIANO 1 SW3
E PIANO 2 SW4
ROCK PIANO SW8
HARPSI/HAWAII GTR SW9
GUITAR SW10
ELECTR GUITAR SW11
MALLET SW12
SPECIAL PERC SW13
BRASS 1 SW16
BRASS 2 SW17
TRUMPET SW18
SAX SW19
REED SW20
FLUTE/OBOE SW21
ORGAN SW22
STRINGS SW23
SYNTH/VOCAL SW24
ACOUSTIC SW25
ELECTRIC SW26
SPECIAL SW27
BASS
SOUND SELECT

GHT CIRCUIT BOARD

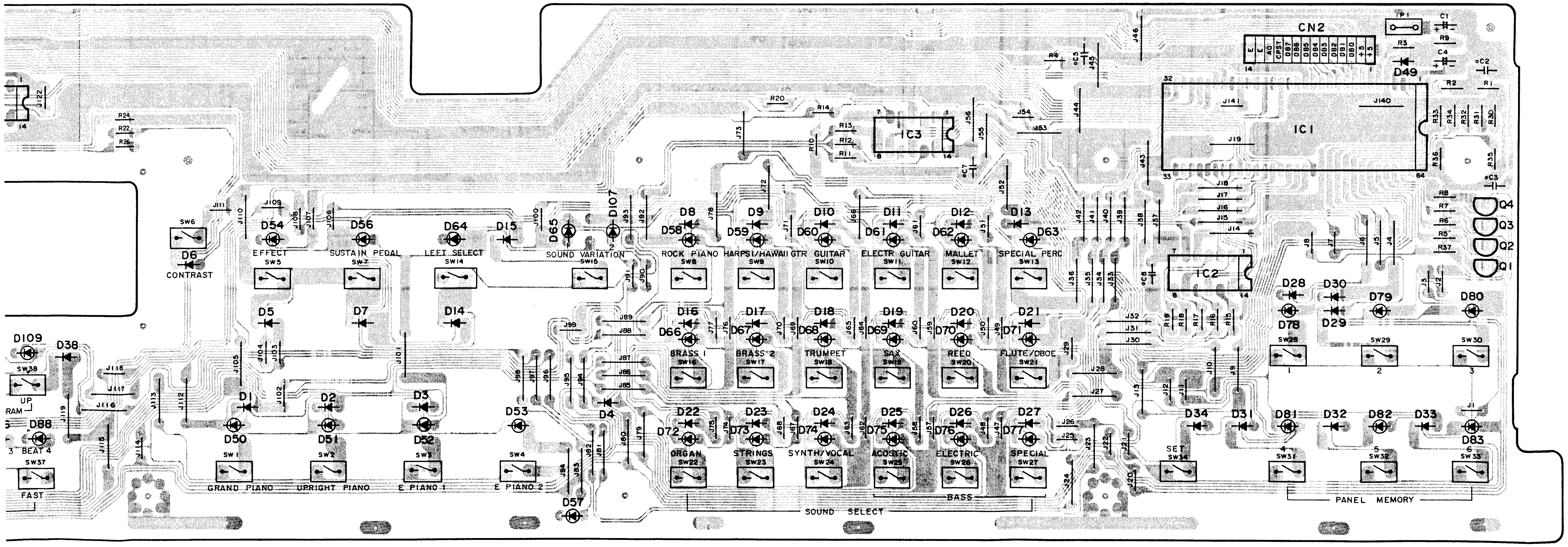

5
6
7
8
9
10
11
12
13
14
CN1
CN2
IC1
IP1
Q1
Q2
Q3
Q4
RHYTHM SELECT
MARCH
COUNTRY
WALTZ
BIG BAND
JAZZ COMBO
JAZZ BALLAD
8 BEAT 1
8 BEAT 2
ROCK'N ROLL
SHUFFLE
ROCK BALLAD
16 BEAT 1
METRONOME
ACCOMP 1
ACCOMP 2
ACCOMP 3
ACCOMP PART
SPLIT
PIANO MODE
NORMAL
PLAY
PIANIST
CHORD
ONE TOUCH PLAY
DYNAMIC ACCOMP
COUNT & FILL IN
INTRO & ENDING
SYNCHRO START
DRUMS
BASS
ACCOMP
LEFT
RIGHT
BALANCE

SXPG211511A

CPL

NOTES:
- IC'S
  IC1: SVIGM603A121
  IC2, 3: HD74LS07P
- TRANSISTORS
  Q1~4: 2SA830SB
- DIODES
  D1~44, 49: MA165TA5
  D50~54, 70~83, 87, 89~99, 106: LN282R
  D100: LN382G
- IC PROTECTOR
  IP1: ICP-N10T104

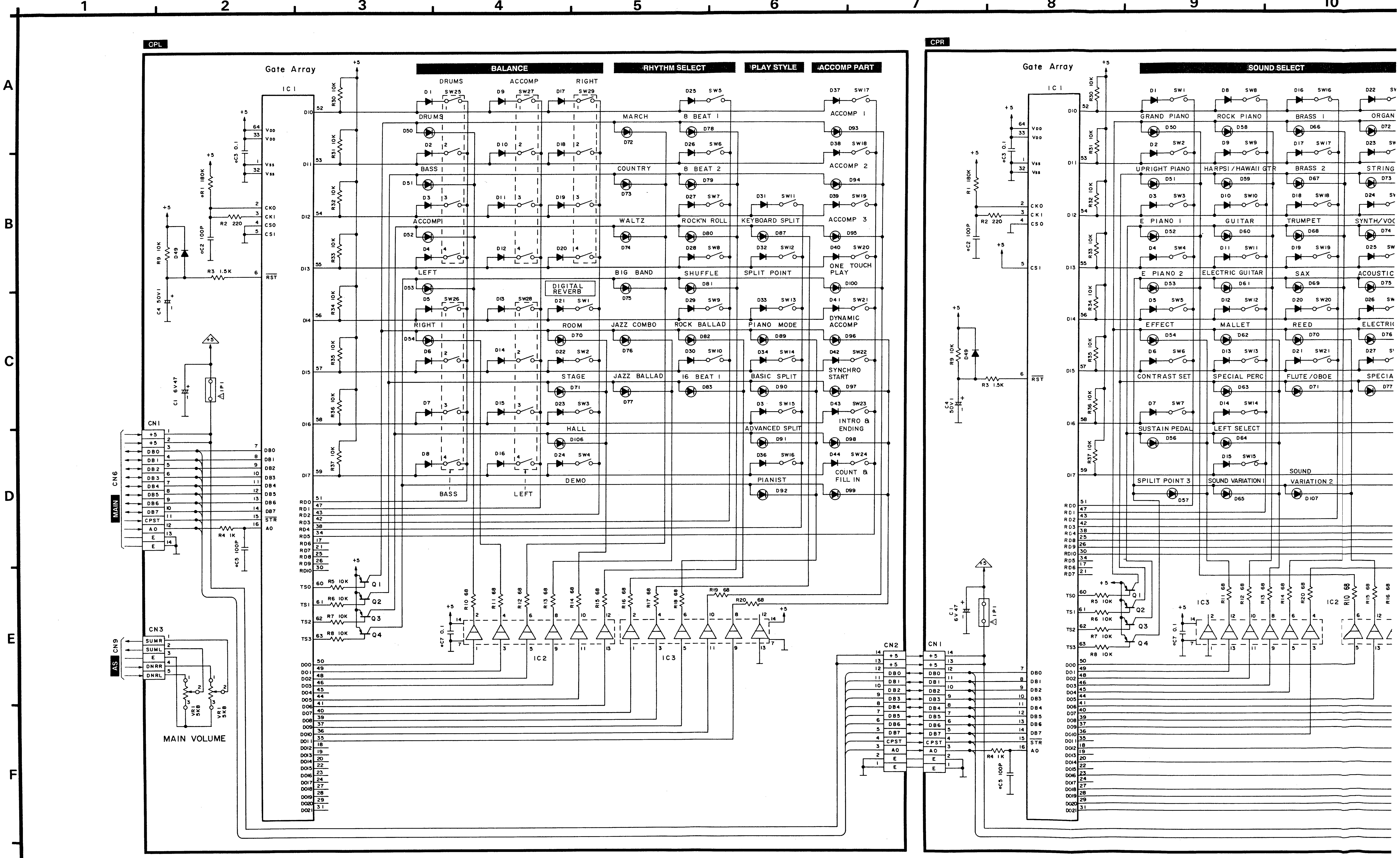
SXPG211521B


CN2
IC1
IC2
IC3
IP1
Q1
Q2
Q3
Q4
CONTRAST
EFFECT
SUSTAIN PEDAL
LEFT SELECT
SOUND VARIATION
ROCK PIANO
HARPSI/HAWAII GTR
GUITAR
ELECTR GUITAR
MALLET
SPECIAL PERC
BRASS 1
BRASS 2
TRUMPET
SAX
REED
FLUTE/OBOE
ORGAN
STRINGS
SYNTH/VOCAL
ACOSTIC
ELECTRIC
SPECIAL
BASS
SOUND SELECT
GRAND PIANO
UPRIGHT PIANO
E PIANO 1
E PIANO 2
UP
BEAT 4
FAST
SET
PANEL MEMORY

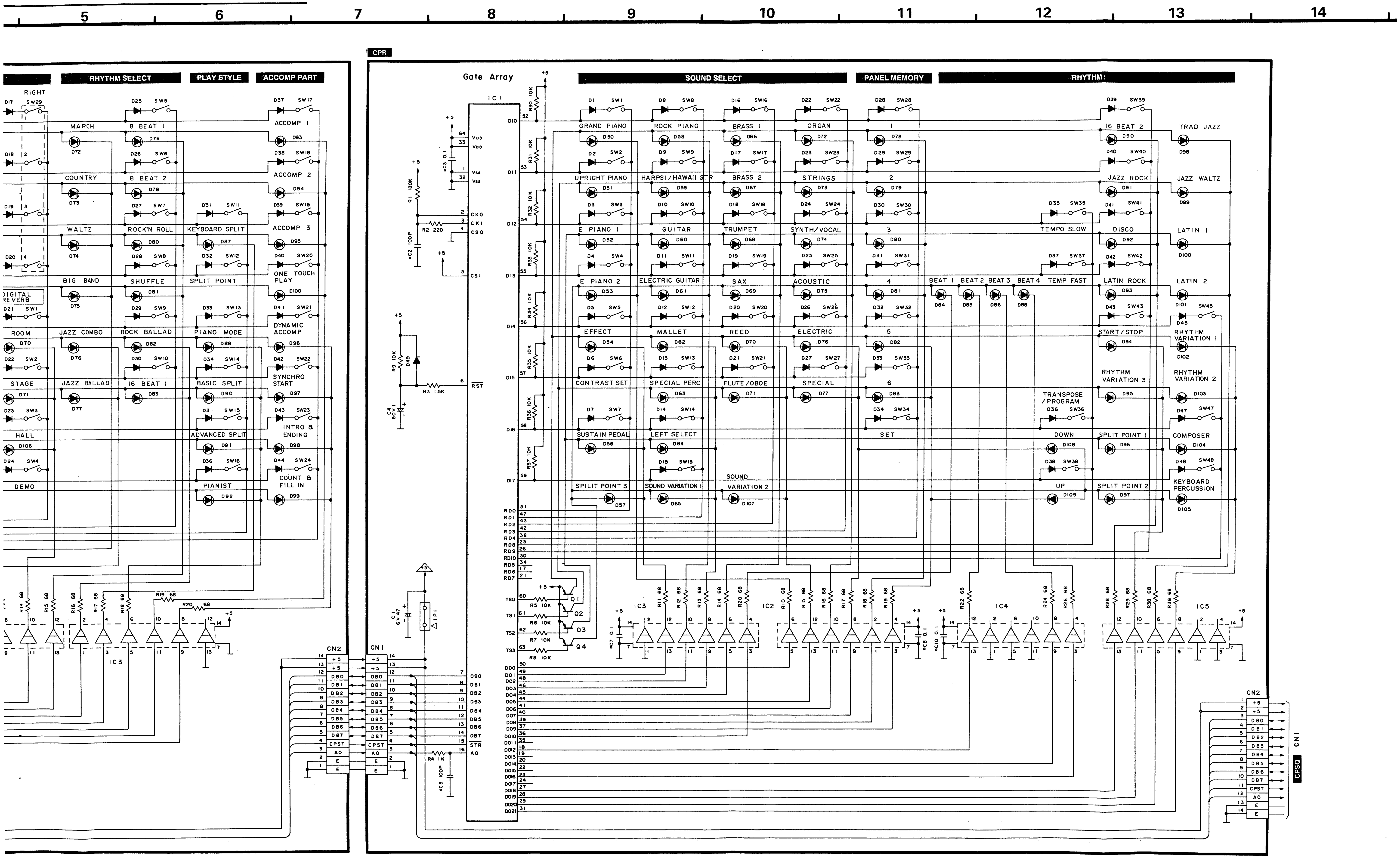
CPR

NOTES:
- IC'S
  IC1: SVIGM603A121
  IC2~5: HD74LS07P
- TRANSISTORS
  Q1~4: 2SA830SB
- DIODES
  D1~43, 45, 47~49: MA165TA5
  D50~54, 56~77, 84, 90~103, 105, 107~109: LN282R
  D78~83, 85, 86, 88, 104: LN382G
- IC PROTECTOR
  IP1: ICP-N10T104

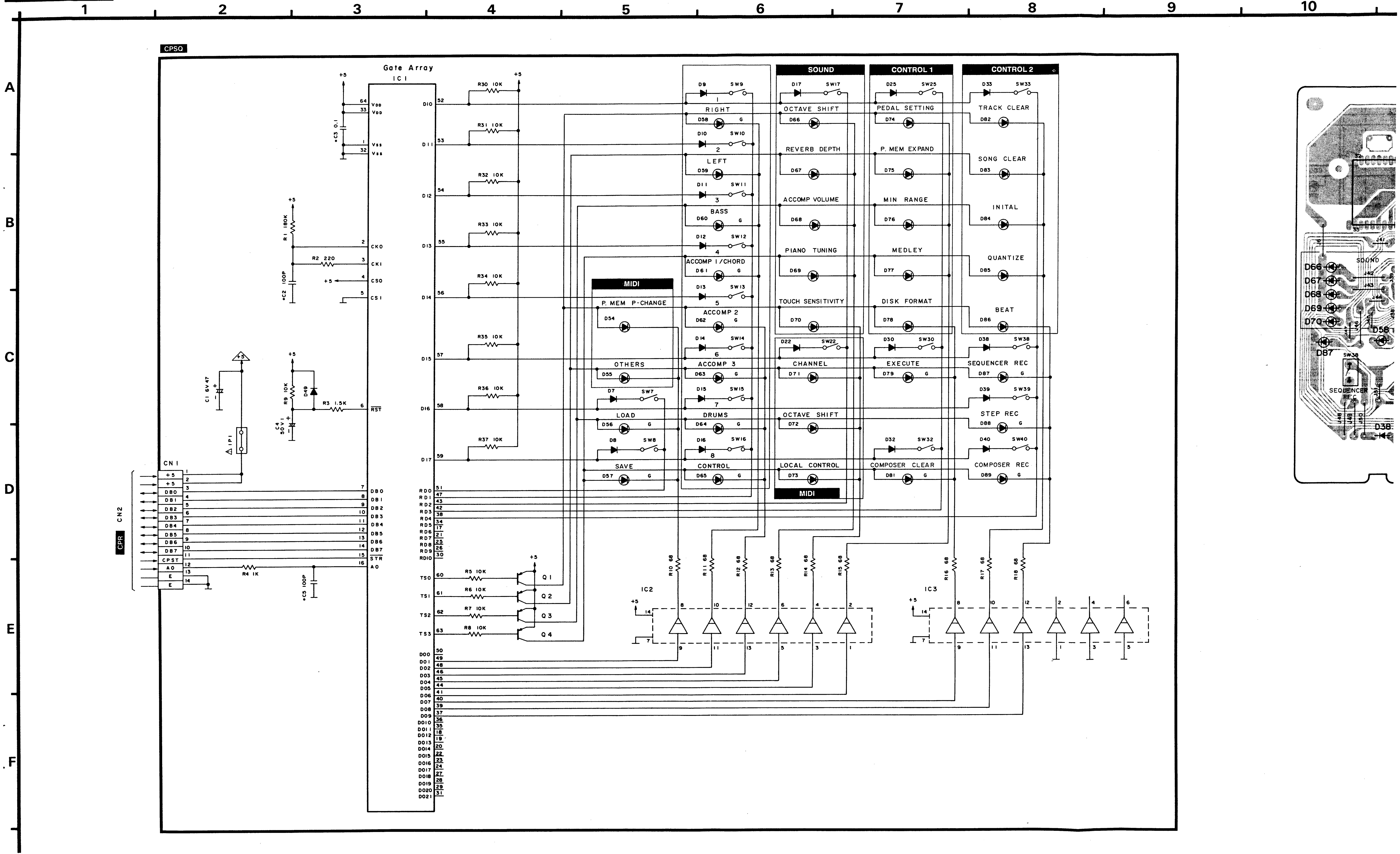
CPL CPR CONTROL PANEL LEFT AND RIGHT CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
CPL
Gate Array
IC1
BALANCE
DRUMS
ACCOMP
RIGHT
RHYTHM SELECT
PLAY STYLE
ACCOMP PART
MARCH
COUNTRY
WALTZ
BIG BAND
JAZZ COMBO
JAZZ BALLAD
8 BEAT 1
8 BEAT 2
ROCK'N ROLL
SHUFFLE
ROCK BALLAD
16 BEAT 1
KEYBOARD SPLIT
SPLIT POINT
PIANO MODE
BASIC SPLIT
ADVANCED SPLIT
PIANIST
ACCOMP 1
ACCOMP 2
ACCOMP 3
ONE TOUCH PLAY
DYNAMIC ACCOMP
SYNCHRO START
INTRO & ENDING
COUNT & FILL IN
DIGITAL REVERB
ROOM
STAGE
HALL
DEMO
BASS
ACCOMP1
LEFT
RIGHT 1
CN1
CN6
MAIN
CN3
CN9
AS
MAIN VOLUME
VR1 5K8
IC2
IC3
CN2
CPR
SOUND SELECT
GRAND PIANO
UPRIGHT PIANO
E PIANO 1
E PIANO 2
EFFECT
CONTRAST SET
SUSTAIN PEDAL
SPLIT POINT 3
ROCK PIANO
HARPSI / HAWAII GTR
GUITAR
ELECTRIC GUITAR
MALLET
SPECIAL PERC
LEFT SELECT
SOUND VARIATION 1
BRASS 1
BRASS 2
TRUMPET
SAX
REED
FLUTE/OBOE
SOUND VARIATION 2
ORGAN
STRING
SYNTH/VO
ACOUSTIC
ELECTRI
SPECIA

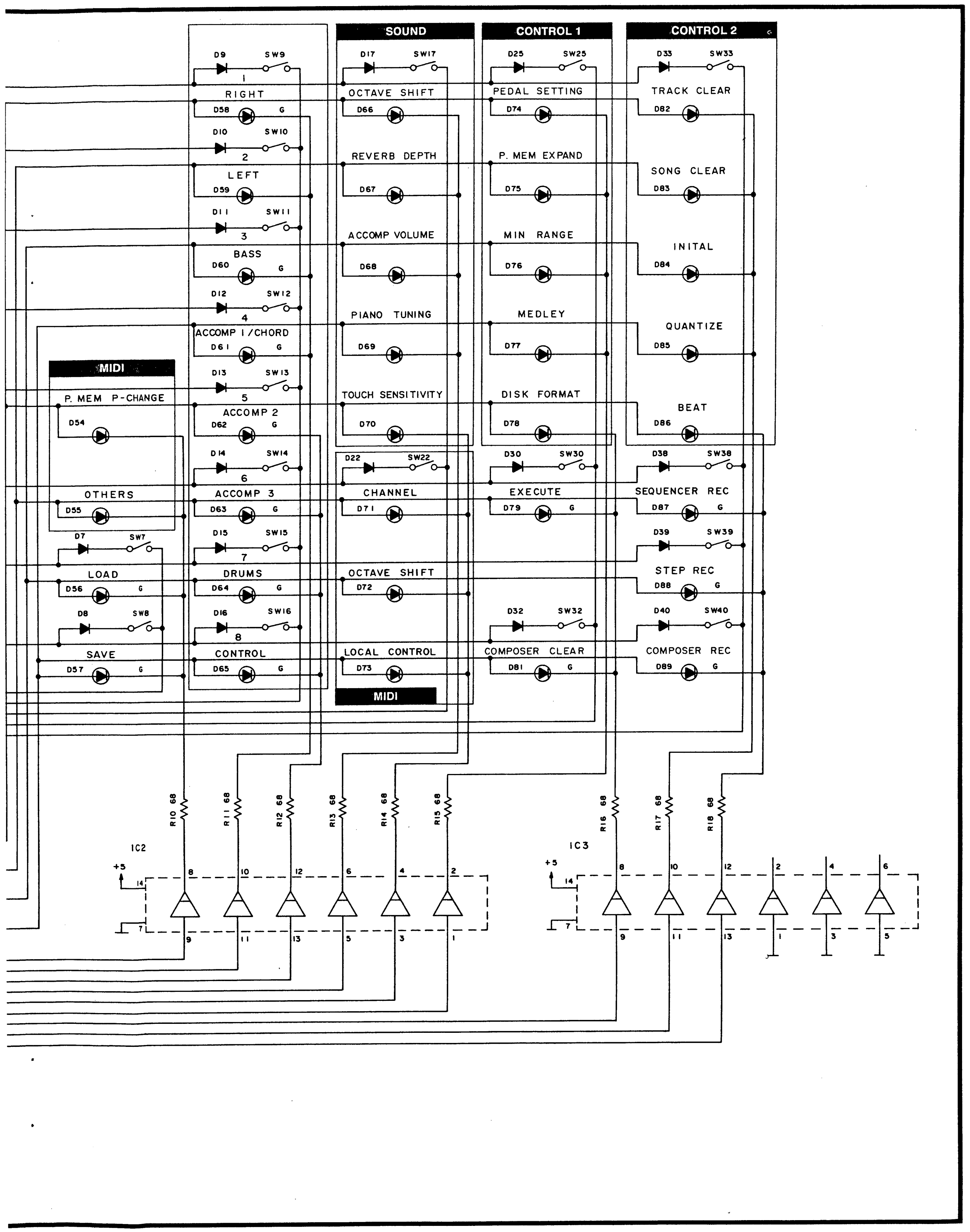
IGHT CIRCUIT DIAGRAM


5
6
7
8
9
10
11
12
13
14
CPR
RHYTHM SELECT
PLAY STYLE
ACCOMP PART
SOUND SELECT
PANEL MEMORY
RHYTHM
Gate Array
IC1
RIGHT
MARCH
COUNTRY
WALTZ
BIG BAND
JAZZ COMBO
JAZZ BALLAD
8 BEAT 1
8 BEAT 2
ROCK'N ROLL
SHUFFLE
ROCK BALLAD
16 BEAT 1
KEYBOARD SPLIT
SPLIT POINT
PIANO MODE
BASIC SPLIT
ADVANCED SPLIT
PIANIST
ACCOMP 1
ACCOMP 2
ACCOMP 3
ONE TOUCH PLAY
DYNAMIC ACCOMP
SYNCHRO START
INTRO & ENDING
COUNT & FILL IN
DIGITAL REVERB
ROOM
STAGE
HALL
DEMO
GRAND PIANO
UPRIGHT PIANO
E PIANO 1
E PIANO 2
EFFECT
CONTRAST SET
SUSTAIN PEDAL
SPLIT POINT 3
ROCK PIANO
HARPSI / HAWAII GTR
GUITAR
ELECTRIC GUITAR
MALLET
SPECIAL PERC
LEFT SELECT
SOUND VARIATION 1
BRASS 1
BRASS 2
TRUMPET
SAX
REED
FLUTE / OBOE
SOUND VARIATION 2
ORGAN
STRINGS
SYNTH / VOCAL
ACOUSTIC
ELECTRIC
SPECIAL
1
2
3
4
5
6
SET
TEMPO SLOW
TEMPO FAST
BEAT 1
BEAT 2
BEAT 3
BEAT 4
TRANSPOSE / PROGRAM
DOWN
UP
16 BEAT 2
JAZZ ROCK
DISCO
LATIN ROCK
START / STOP
RHYTHM VARIATION 3
SPLIT POINT 1
SPLIT POINT 2
TRAD JAZZ
JAZZ WALTZ
LATIN 1
LATIN 2
RHYTHM VARIATION 1
RHYTHM VARIATION 2
COMPOSER
KEYBOARD PERCUSSION
IC2
IC3
IC4
IC5
CN1
CN2
CPSO
Q1
Q2
Q3
Q4
+5
VDD
VSS
CKO
CKI
CSO
CSI
RST
STR
A0
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
CPST
E
R1 180K
R2 220
R3 1.5K
R4 1K
R5 10K
R6 10K
R7 10K
R8 10K
C1 6V 47
C2 100P
C3 0.1
C4 50V 1
C5 100P
IP1

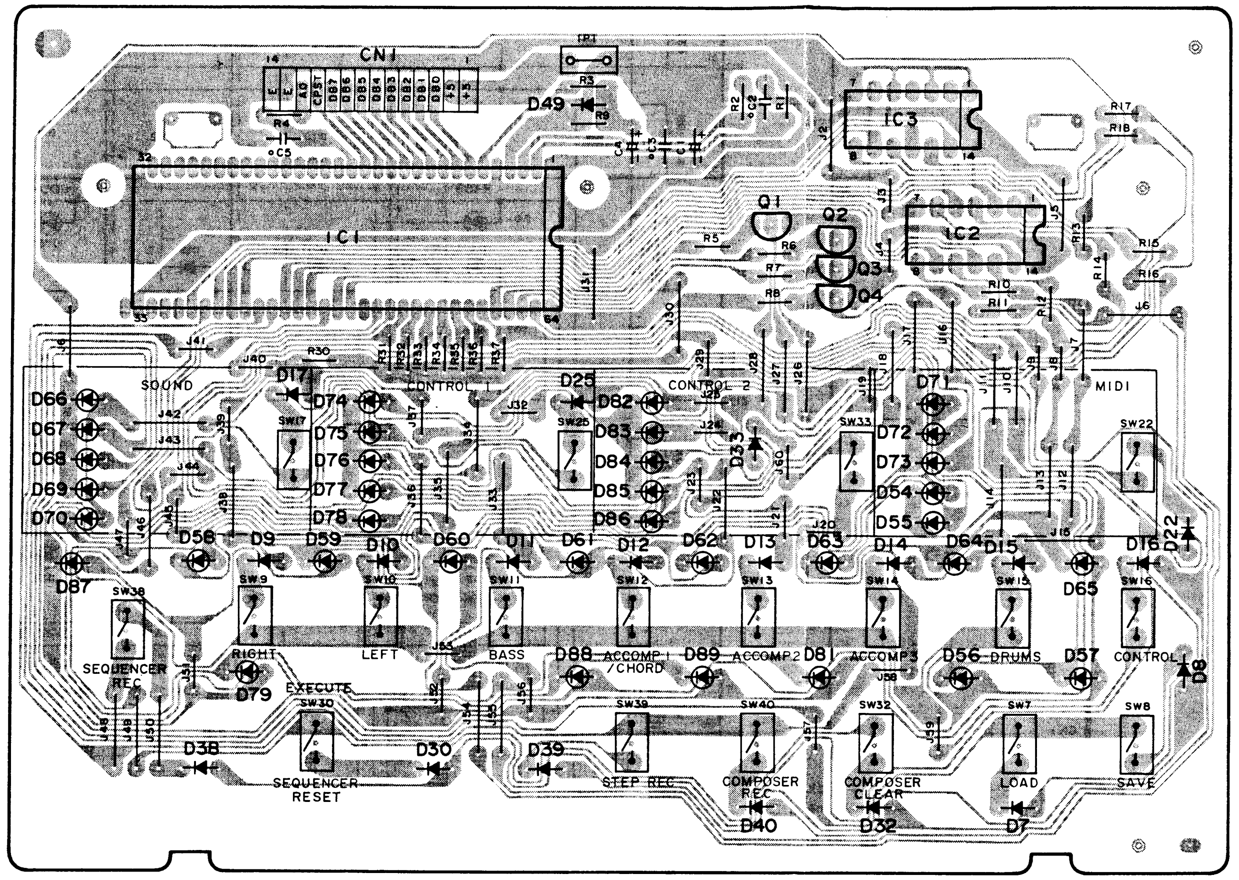
SEQUENCER CONTROL CIRCUIT


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
CPSQ
Gate Array
IC1
MIDI
SOUND
CONTROL 1
CONTROL 2
RIGHT
LEFT
BASS
ACCOMP 1/CHORD
ACCOMP 2
ACCOMP 3
DRUMS
CONTROL
P. MEM P-CHANGE
OTHERS
LOAD
SAVE
OCTAVE SHIFT
REVERB DEPTH
ACCOMP VOLUME
PIANO TUNING
TOUCH SENSITIVITY
CHANNEL
OCTAVE SHIFT
LOCAL CONTROL
PEDAL SETTING
P. MEM EXPAND
MIN RANGE
MEDLEY
DISK FORMAT
EXECUTE
COMPOSER CLEAR
TRACK CLEAR
SONG CLEAR
INITAL
QUANTIZE
BEAT
SEQUENCER REC
STEP REC
COMPOSER REC
CN1
CN2
CPR
IC2
IC3
Q1
Q2
Q3
Q4
R1 180K
R2 220
R3 1.5K
R4 1K
R9 10K
R30 10K
R31 10K
R32 10K
R33 10K
R34 10K
R35 10K
R36 10K
R37 10K
R5 10K
R6 10K
R7 10K
R8 10K
R10 68
R11 68
R12 68
R13 68
R14 68
R15 68
R16 68
R17 68
R18 68
C1 6V47
C2 100P
C3 0.1
C4 50V1
C5 100P
D49
IP1
VDD
VSS
CK0
CK1
CS0
CS1
RST
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
STR
A0
CPST
DI0
DI1
DI2
DI3
DI4
DI5
DI6
DI7
RD0
RD1
RD2
RD3
RD4
RD5
RD6
RD7
RD8
RD9
RD10
TS0
TS1
TS2
TS3
DO0
DO1
DO2
DO3
DO4
DO5
DO6
DO7
DO8
DO9
DO10
DO11
DO12
DO13
DO14
DO15
DO16
DO17
DO18
DO19
DO20
DO21
+5
SOUND
SEQUENCER REC
SW38
D66
D67
D68
D69
D70
D58
D87
D38

5 6 7 8 9 10 11 12 13 14


SOUND
CONTROL 1
CONTROL 2
MIDI
D9 SW9 1 RIGHT D58 G
D10 SW10 2 LEFT D59
D11 SW11 3 BASS D60 G
D12 SW12 4 ACCOMP 1/CHORD D61 G
D13 SW13 5 ACCOMP 2 D62 G
D14 SW14 6 ACCOMP 3 D63 G
D15 SW15 7 DRUMS D64 G
D16 SW16 8 CONTROL D65 G
D17 SW17 OCTAVE SHIFT D66
REVERB DEPTH D67
ACCOMP VOLUME D68
PIANO TUNING D69
TOUCH SENSITIVITY D70
D22 SW22 CHANNEL D71
OCTAVE SHIFT D72
LOCAL CONTROL D73
D25 SW25 PEDAL SETTING D74
P. MEM EXPAND D75
MIN RANGE D76
MEDLEY D77
DISK FORMAT D78
D30 SW30 EXECUTE D79 G
D32 SW32 COMPOSER CLEAR D81 G
D33 SW33 TRACK CLEAR D82
SONG CLEAR D83
INITAL D84
QUANTIZE D85
BEAT D86
D38 SW38 SEQUENCER REC D87 G
D39 SW39 STEP REC D88 G
D40 SW40 COMPOSER REC D89 G
P. MEM P-CHANGE D54
OTHERS D55
D7 SW7 LOAD D56 G
D8 SW8 SAVE D57 G
R10 68
R11 68
R12 68
R13 68
R14 68
R15 68
R16 68
R17 68
R18 68
IC2
IC3
+5
14
7
8 10 12 6 4 2
9 11 13 5 3 1
8 10 12 2 4 6
9 11 13 1 3 5

SXPG211611

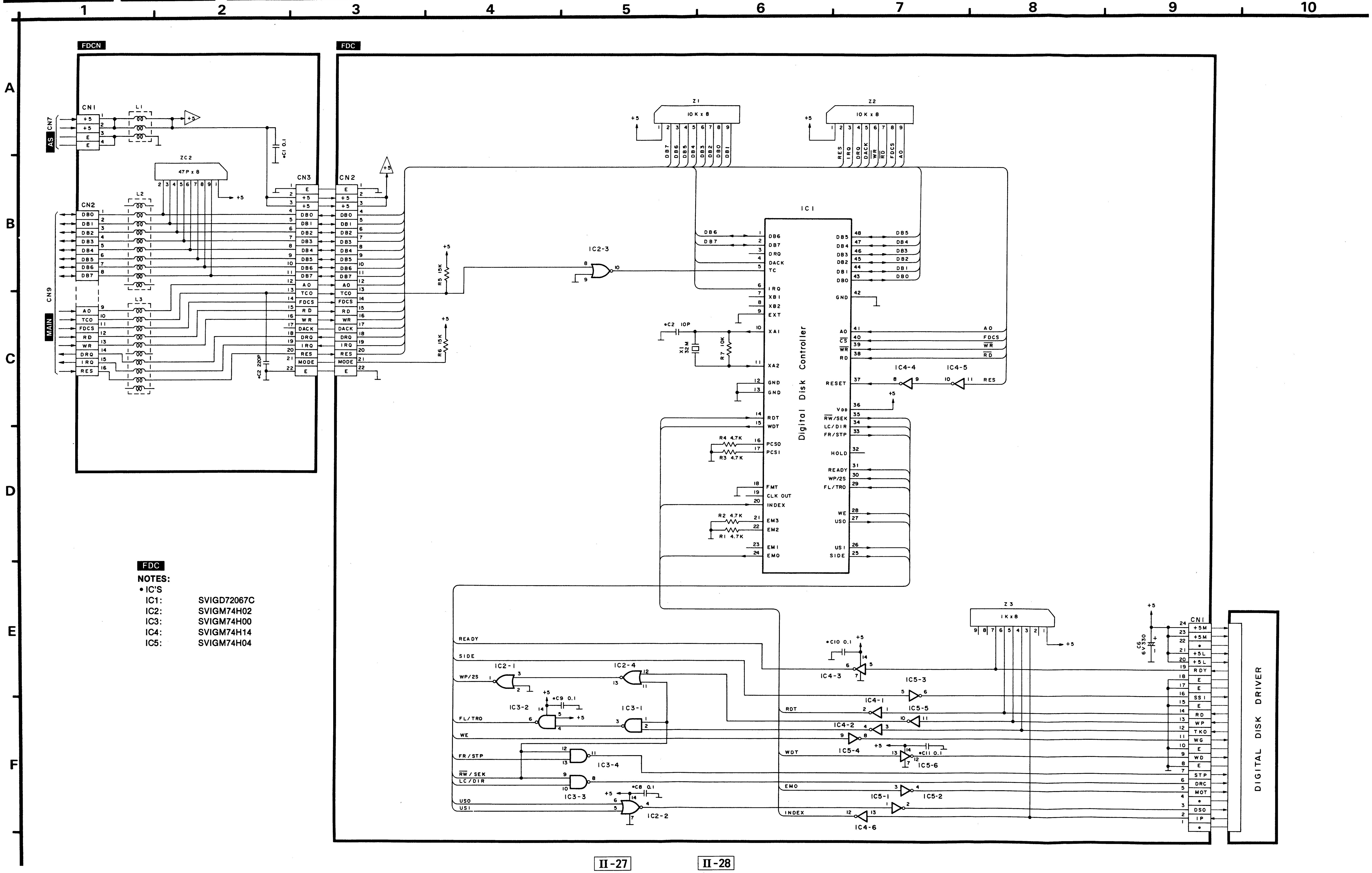

CN1
IP1
R3
D49
R4
C5
IC1
IC2
IC3
Q1
Q2
Q3
Q4
R5
R6
R7
R8
R10
R11
R17
R18
R15
R16
SOUND
CONTROL 1
CONTROL 2
MIDI
D66 D67 D68 D69 D70
D71 D72 D73 D54 D55
D74 D75 D76 D77 D78
D82 D83 D84 D85 D86
D17 D25 D33 D22
D87 D56 D9 D59 D10 D60 D11 D61 D12 D62 D13 D63 D14 D64 D15 D16 D65
SW38 SW9 SW10 SW11 SW12 SW13 SW14 SW15 SW16
SEQUENCER REC
RIGHT
LEFT
BASS
D88 ACCOMP 1 /CHORD
D89 ACCOMP2
D81 ACCOMP3
D56 DRUMS
D57 CONTROL
D8
D79
EXECUTE SW30
D38
SEQUENCER RESET
D30
D39
SW39 STEP REC
SW40 COMPOSER REC
D40
SW32 COMPOSER CLEAR
D32
SW7 LOAD
D7
SW8 SAVE
SW17 SW25 SW33 SW22

CPSQ

NOTES:

- IC'S
  - IC1: SVIGM603A121
  - IC2, 3: HD74LS07P
- TRANSISTORS
  - Q1~4: 2SA830SB
- DIODES
  - D7~49: MA165TA5
  - D54, 55, 66~78, 82~86: LN282R
  - D56~65, 79, 81, 87~89: LN382G
- IC PROTECTOR
  - IP1: ICP-N10T104

FDCN FDC FD CONNECTOR AND FD CONTROL CIRCUIT


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
FDCN
FDC
CN1
CN7
AS
+5
E
L1
C1 0.1
ZC2
47P x 8
CN2
CN3
L2
L3
CN9
MAIN
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
A0
TC0
FDCS
RD
WR
DRQ
IRQ
RES
MODE
C2 220P
Z1
10K x 8
Z2
RES
IRQ
DRQ
DACK
WR
RD
FDCS
A0
IC1
Digital Disk Controller
IC2-3
R5 15K
R6 15K
C2 10P
X1 32M
R7 10K
DACK
TC
XB1
XB2
EXT
XA1
XA2
GND
RDT
WDT
R4 4.7K
R3 4.7K
PCS0
PCS1
FMT
CLK OUT
INDEX
R2 4.7K
R1 4.7K
EM3
EM2
EM1
EM0
RESET
VDD
RW/SEK
LC/DIR
FR/STP
HOLD
READY
WP/2S
FL/TR0
WE
US0
US1
SIDE
IC4-4
IC4-5
Z3
1K x 8
READY
SIDE
WP/2S
FL/TR0
WE
FR/STP
RW/SEK
LC/DIR
US0
US1
IC2-1
IC2-4
IC3-2
IC3-1
IC3-4
IC3-3
IC2-2
C9 0.1
C8 0.1
C10 0.1
C11 0.1
IC4-3
IC5-3
IC4-1
IC5-5
IC4-2
IC5-4
IC5-6
IC5-1
IC5-2
IC4-6
RDT
WDT
EMO
INDEX
C6 6V330
CN1
+5M
+5L
RDY
SS1
RD
WP
TK0
WG
WD
STP
DRC
MOT
DS0
IP
DIGITAL DISK DRIVER

FDC

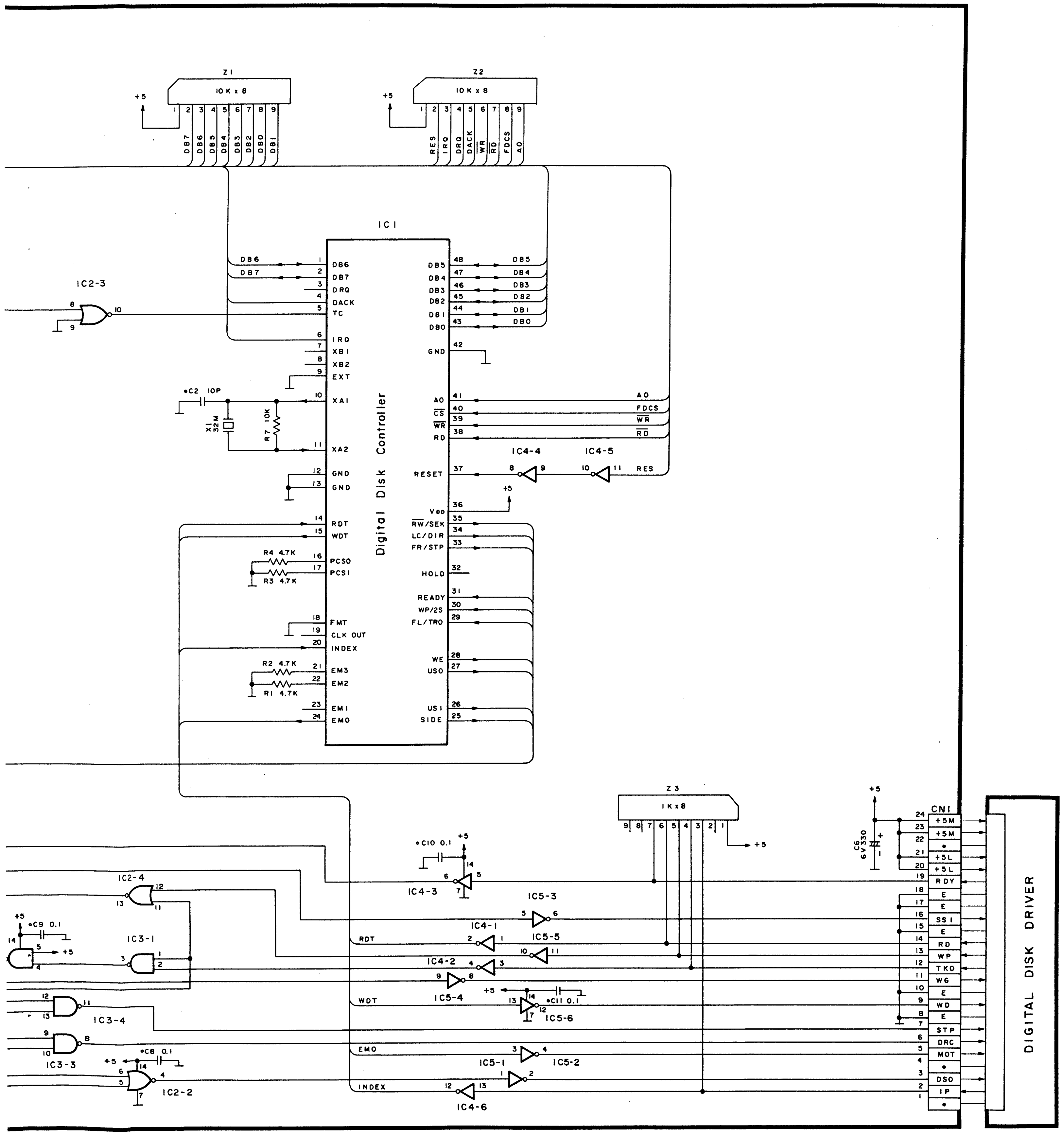
NOTES:

- IC'S

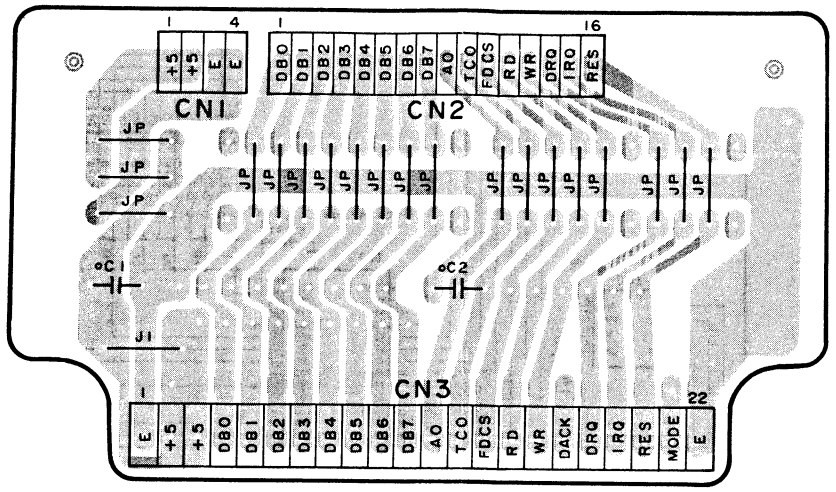
IC1:	SVIGD72067C
IC2:	SVIGM74H02
IC3:	SVIGM74H00
IC4:	SVIGM74H14
IC5:	SVIGM74H04

ONTROL CIRCUIT

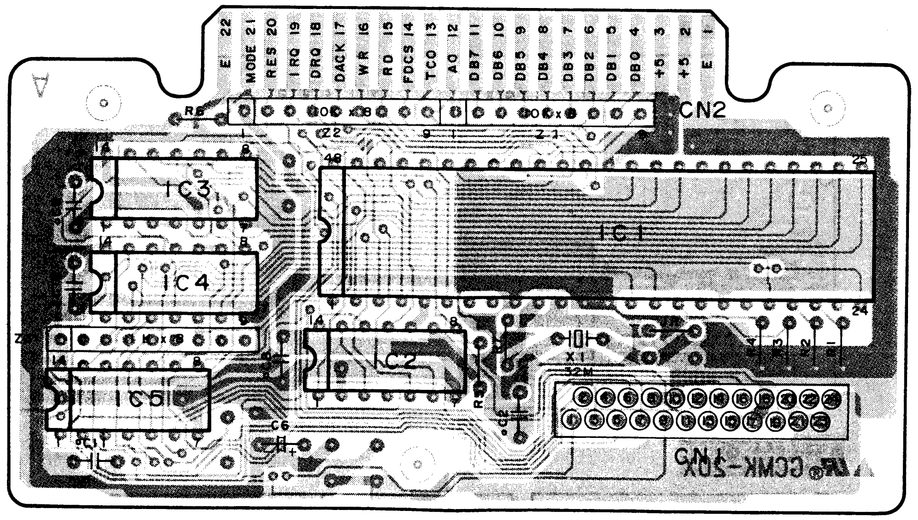
5 6 7 8 9 10 11 12 13 14


Z1
10K x 8
Z2
10K x 8
+5
DB7 DB6 DB5 DB4 DB3 DB2 DB0 DB1
RES IRQ DRQ DACK WR RD FDCS A0
IC1
Digital Disk Controller
DB6 DB7 DRQ DACK TC IRQ XB1 XB2 EXT XA1 XA2 GND GND RDT WDT PCS0 PCS1 FMT CLK OUT INDEX EM3 EM2 EM1 EM0
DB5 DB4 DB3 DB2 DB1 DB0 GND A0 CS WR RD RESET VDD RW/SEK LC/DIR FR/STP HOLD READY WP/2S FL/TRO WE US0 US1 SIDE
IC2-3
C2 10P
X1 32M
R7 10K
R4 4.7K
R3 4.7K
R2 4.7K
R1 4.7K
IC4-4
IC4-5
Z3
1K x 8
C10 0.1
IC4-3
IC5-3
IC4-1
IC5-5
IC4-2
IC5-4
C11 0.1
IC5-6
IC5-1
IC5-2
IC4-6
IC2-4
IC3-1
IC3-4
IC3-3
IC2-2
C9 0.1
C8 0.1
C6 6V330
RDT
WDT
EMO
INDEX
CN1
+5M +5M +5L +5L RDY E E SS1 E RD WP TKO WG E WD E STP DRC MOT DSO IP
DIGITAL DISK DRIVER

FDCN **SXPG212711**


CN1
CN2
CN3
JP
C1
C2
J1
+5 +5 E E
DB0 DB1 DB2 DB3 DB4 DB5 DB6 DB7 A0 TC0 FDCS RD WR DRQ IRQ RES
E +5 +5 DB0 DB1 DB2 DB3 DB4 DB5 DB6 DB7 A0 TC0 FDCS RD WR DACK DRQ IRQ RES MODE E

FDC **SXPG208311**


E 22
MODE 21
RES 20
IRQ 19
DRQ 18
DACK 17
WR 16
RD 15
FDCS 14
TC0 13
A0 12
DB7 11
DB6 10
DB5 9
DB4 8
DB3 7
DB2 6
DB1 5
DB0 4
+5 3
+5 2
E 1
CN2
IC3
IC1
IC4
IC2
IC6
X1 32M
CN1
GCMK-2DX

Circuit view on top of P.C.B.

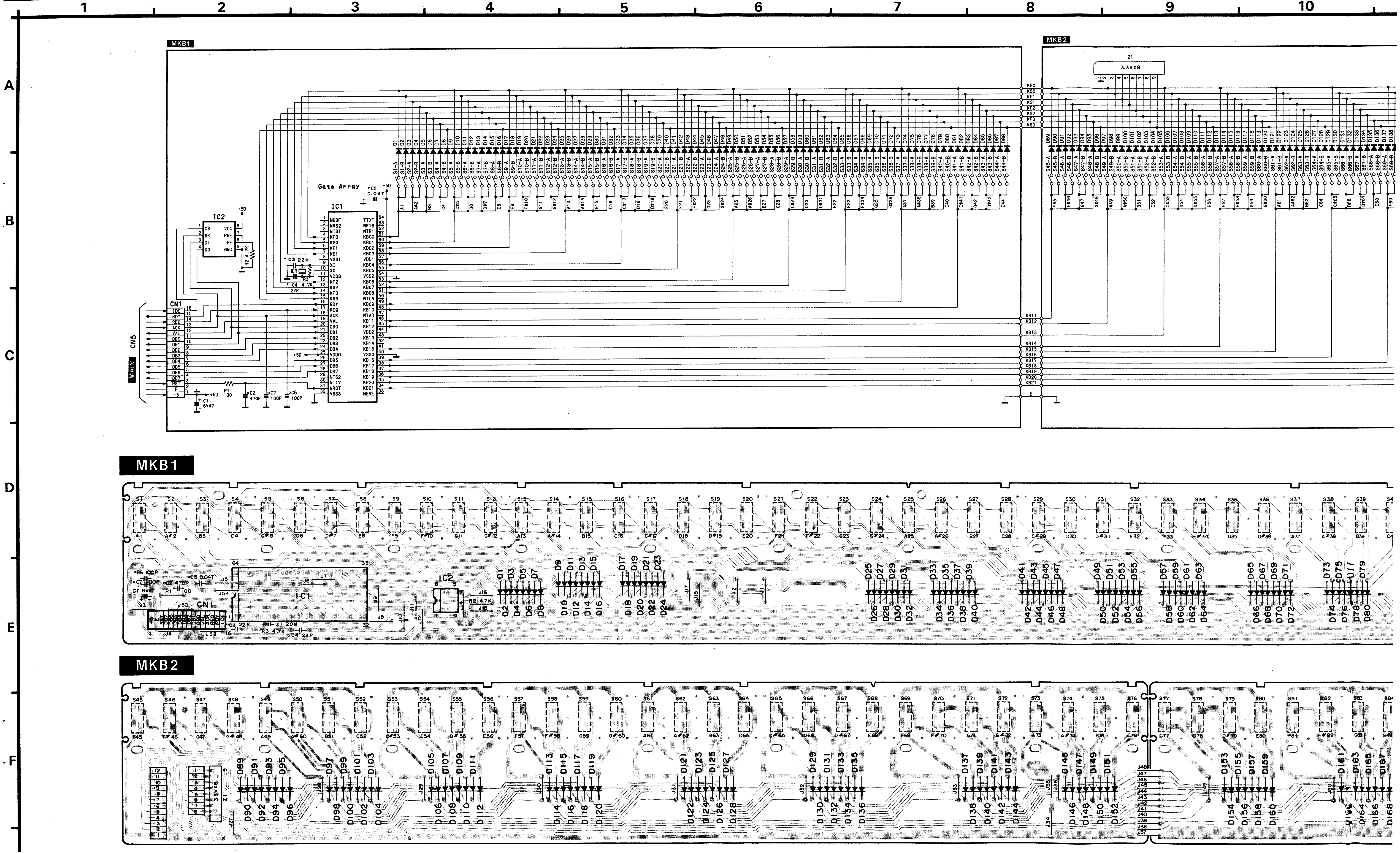
NOTES:

- IC'S

IC1:	SVIGD72067C
IC2:	SVIGM74H02
IC3:	SVIGM74H00
IC4:	SVIGM74H14
IC5:	SVIGM74H04

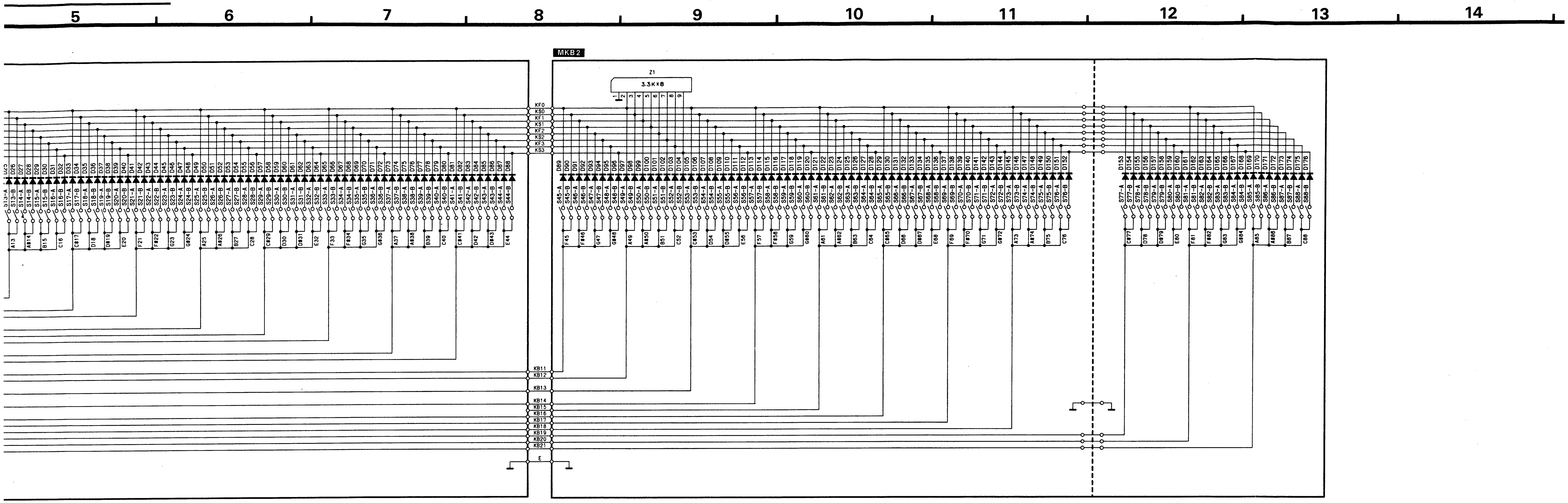
MKB1 **MKB2**

MANUAL KEYBOARD 1 AND 2 CIRCUIT

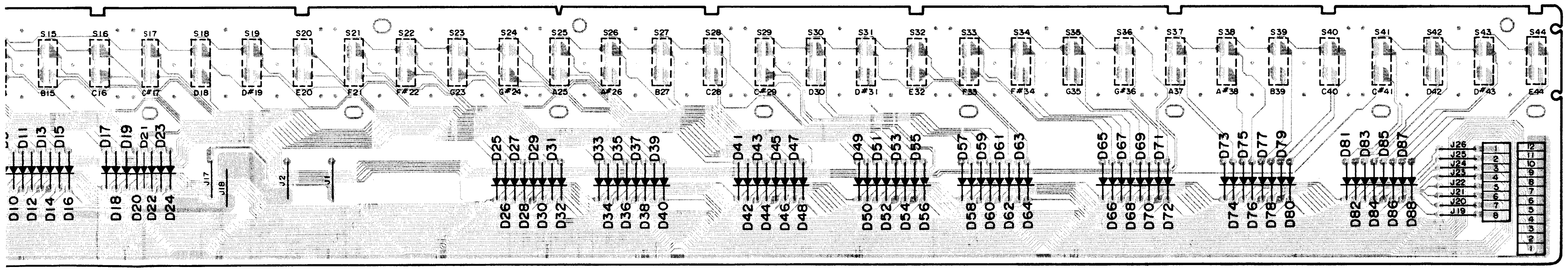


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
MKB1
MKB2
Z1
3.3K×8
Gate Array
IC1
IC2
CN1
CN5
MAIN
C5 0.047
C3 22P
C4 22P
X1
R3 4.7K
R2 4.7K
R1 100
C1 6V47
C2 470P
C7 100P
C6 100P
+5D
NBBF
NRS2
NTST
KF0
KS0
KF1
KS1
VSS1
XI
XO
VDD3
KF2
KS2
KF3
KS3
RDY
REQ
ACK
VAL
DB0
DB1
DB2
DB3
DB4
VDD0
DB5
DB6
DB7
NTS2
NT17
VRST
VSS3
TTXF
NK16
NTR1
KB00
KB01
KB02
KB03
VDD1
KB04
KB05
VSS2
KB06
KB07
KB08
NTLM
KB09
KB10
NTAD
KB11
KB12
VDD2
KB13
KB14
KB15
VSS0
KB16
KB17
KB18
KB19
KB20
KB21
NERE
CS
SK
DI
DO
VCC
PRE
PE
GND
IDE
RST
E
+5
J1
J2
J3
J4
J5
J6
J7
J8
J9
J10
J11
J12
J13
J15
J16
J17
J18
J52
J53
J54

2 CIRCUIT


5
6
7
8
9
10
11
12
13
14
MKB2
Z1
3.3K×8
KF0
KS0
KF1
KS1
KF2
KS2
KF3
KS3
KB11
KB12
KB13
KB14
KB15
KB16
KB17
KB18
KB19
KB20
KB21
E
D89
D176
S45-A
S88-B
F45
C88

SXPG209711A


S15
S44
J17
J18
J19
J26
D10
D88

MKB1

NOTES:

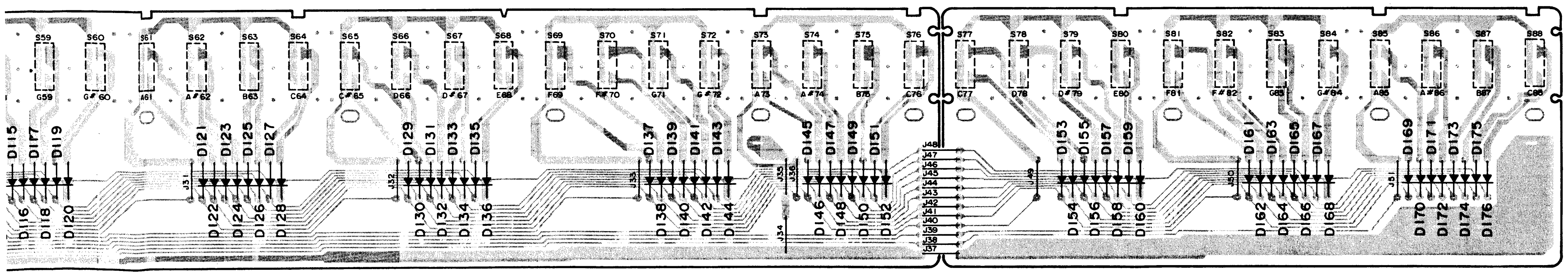
- **IC'S**

IC1:	MSM7U042016
IC2:	BR93CS46

- **DIODES**

D1～88:	MT162A

SXPG209711B


S59
S88
J31
J56
D115
D176

MKB2

NOTES:

- **DIODES**

D89～176:	MT162A

REPLACEMENT PARTS LIST......P.C.B. and Wiring Parts

Notes:

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "S" mark is service standard parts and may differ from production parts.
4. ○ mark are new parts.
5. For part No. with area mark, check the area when placing an order.

■ PRINTED CIRCUIT BOARD

	RTL	Area	Part No.	Description	Per/Set
○	RTL	M MC XM EZ	SXPG211491	MAIN	1
○	RTL	Others	SXPG211461	MAIN	1
○	RTL	M MC XM EZ	SXPG209841	JACK	1
○	RTL	Others	SXPG209831	JACK	1
○	RTL	M MC XM	SXPG211871	AS	1
○	RTL	EZ	SXPG211881	AS	1
○	RTL	Others	SXPG211851	AS	1
○	RTL	M MC XM	SXPG212831	TCF	1
○	RTL	EK X XR XS XT XD	SXPG212841	TCF	1
○	RTL	Others	SXPG212811	TCF	1
○	RTL		SXPG210831	HP	1
○	RTL		SXPG211511A	CPL	1
○	RTL		SXPG211521B	CPR	1
○	RTL		SXPG211611	CPSQ	1
○	RTL		SXPG212711	FDCN	1
	RTL		SXPG208311	FDC	1
	RTL		SXPG209711A	MKB1	1
	RTL		SXPG209711B	MKB2	1
○			QSLG005AA	LCD	1

MAIN MAIN CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
		INTEGRATED CIRCUITS		
○	IC1	D70325GJ-10	16 bit Microcomputer	1
	IC2	D65012GF-A79	Gate Array	1
	IC3	SVIGMSM6253	A/D Converter	1
○	IC4	QSIGCR370AX0	4M bit Programmed EP ROM	1
○	IC5	QSIGH3C04C21	4M bit Accomp Data ROM	1
○	IC6, 8	ATT7C256BF85	256K bit Static RAM	2
	IC7	M74HC244FP	Bus Receiver	1
	IC9	HM65256BLF10	256K bit Pseudo Static RAM	1
	IC10	M74HC00FP	Quad 2-input NAND Gates	1
○	IC11	TC25540AF006	Tone Generator LSI	1
○	IC12	D6382GF-3B9	Digital Signal Processor	1
	IC13	M74HC32FP	Quad 2-input OR Gates	1
○	IC14, 15	MN41464AS-08	256K bit Dynamic RAM	2
○	IC16	PCM63P	D-A Converter	1
	IC17	T74H4051AF	8-channel Multiplexer	1
	IC18, 25	M5218AFP	Operational Amplifier	2
	IC19	M5238FP	Operational Amplifier	1
○	IC20	QSIGH3C16C51	16M bit Wave ROM	1
○	IC21	QSIGH3C16C52	16M bit Wave ROM	1
○	IC22	D23C8000B803	8M bit Wave ROM	1
○	IC24	M74HC245FP	Bus Transceiver	1
○	IC26	M5279L05	−5V Voltage Regulator	1
	IC27	SVIGM5278L05	+5V Voltage Regulator	1

	Ref. No.	Part No.	Description	Per/Set
		TRANSISTOR		
	Q1	2SA1534ARS	Transistor	1
		DIODES		
	D1, 3~5	MA165TA5	Diode	4
	D2	MA4051MTA	Zener, 5.1V	1
	D6, 7	MA4062	Zener, 6.2V	2
		OSCILLATORS		
○	X1	QSXG1A1800A	18MHz Quartz Oscillator	1
○	X2	QSXG1A4915A	49.152MHz Quartz Oscillator	1
○	X3	QSXG2F2500A	25MHz Ceramic Oscillator	1
		COMPONENT COMBINATIONS		
	Z1~3, 5~10	EXBS8V472J	4.7kΩ×4	9
	Z4, 11~25, 28	EXBS8V101J	100Ω×4	17
		COIL		
○	L1	QLQGT1B800MA	Coil	1
		RESISTORS		
	R1	ERDS2TJ334	330kΩ	1
	R2	ERDS2TJ472	4.7kΩ	1
	R3	ERDS2TJ225	2.2MΩ	1
	R4~6	ERDS2TJ103	10kΩ	3
	R7	ERDS2TJ154	150kΩ	1
	R8	ERDS2TJ103	10kΩ	1
	R9	ERDS2TJ183	18kΩ	1
	R10	ERDS2TJ332	3.3kΩ	1
	R11~13	ERDS2TJ103	10kΩ	3
	R15, 16	ERDS2TJ103	10kΩ	2
	R17	ERDS2TJ101	100Ω	1
	R18	ERDS2TJ681	680Ω	1
	R19, 20	ERDS2TJ680	68Ω	2
	R21	ERDS2TJ472	4.7kΩ	1
	R22	ERDS2TJ103	10kΩ	1
	R25	ERDS2TJ105	1MΩ	1
	R26	ERDS2TJ682	6.8kΩ	1
	R27	ERDS2TJ101	100Ω	1
	R28	ERDS2TJ102	1kΩ	1
	R29	ERDS2TJ101	100Ω	1
	R30~33	ERDS2TJ221	220Ω	4
	R38, 39	ERDS2TJ683	68kΩ	2
	R41	ERDS2TJ274	270kΩ	1
	R42	ERDS2TJ124	120kΩ	1
	R43	ERDS2TJ823	82kΩ	1
	R44	ERDS2TJ683	68kΩ	1
	R45	ERDS2TJ563	56kΩ	1
	R46	ERDS2TJ393	39kΩ	1
	R48, 49	ERDS2TJ683	68kΩ	2

	Ref. No.	Part No.	Description	Per/Set
	R51	ERDS2TJ563	56kΩ	1
	R52	ERDS2TJ683	68kΩ	1
	R53	ERDS2TJ393	39kΩ	1
	R54	ERDS2TJ823	82kΩ	1
	R55	ERDS2TJ124	120kΩ	1
	R56	ERDS2TJ274	270kΩ	1
	R70	ERDS2TJ103	10kΩ	1
	R71	ERDS2TJ681	680Ω	1
	R72	ERDS2TJ152	1.5kΩ	1
	R73	ERDS2TJ332	3.3kΩ	1
	R75, 76	ERDS2TJ222	2.2kΩ	2
	R77	ERDS2TJ332	3.3kΩ	1
	R80, 81 ⚠	ERD2FCVJ4R7	4.7Ω, 1/4W, Fuse Type	2
	R82	ERDS2TJ472	4.7kΩ	1
	R83	ERDS2TJ331	330Ω	1
	R84	ERDS2TJ103	10kΩ	1
	R85	ERDS2TJ472	4.7kΩ	1
	R86	ERDS2TJ222	2.2kΩ	1
	R87	ERDS2TJ103	10kΩ	1
	R89	ERDS2TJ223	22kΩ	1
	R90	ERDS2TJ102	1kΩ	1
	R91	ERDS2TJ222	2.2kΩ	1
	R92	ERDS2TJ103	10kΩ	1
	R93	ERDS2TJ223	22kΩ	1
	R94	ERDS2TJ102	1kΩ	1
	R100~108	ERDS2TJ101	100Ω	9
	R110~112	ERDS2TJ221	220Ω	3
	R201~203	ERDS2TJ103	10kΩ	3
	R220~254	ERDS2TJ221	220Ω	35
		CAPACITORS		
	C1	ECRR1H104ZF	0.1µF	1
	C2	ECBA1C682MR5	0.0068µF	1
	C3	ECUV1H104ZFX	0.1µF	1
	C4	ECEA1CKN100	10µF, 16V	1
	C5, 6	ECRR1H104ZF	0.1µF	2
	C7	ECUV1H104ZFX	0.1µF	1
	C8	ECRR1H104ZF	0.1µF	1
	C9~14	ECUV1H104ZFX	0.1µF	6
	C15, 16	ECCF1H100D	10pF	2
	C17	ECUV1H104ZFX	0.1µF	1
	C18	ECEA0JKA101	100µF, 6.3V	1
	C19	ECEA1HKA010	1µF, 50V	1
	C20	ECBA1H470J5	47pF	1
	C21~23	ECUV1H104ZFX	0.1µF	3
	C24	ECBA1H680J5	68pF	1
	C25	ECUV1H104ZFX	0.1µF	1
○	C26	EECS5R5V105	1F, 5.5V, Memory Back-up	1
	C27	ECEA1CKA100	10µF, 16V	1
	C28	ECEA0JKA471	470µF, 6.3V	1
	C29	ECUV1H104ZFX	0.1µF	1
	C30	ECCF1H330J	33pF	1
	C31	ECCF1H150J	15pF	1
	C32, 33	ECUV1H104ZFX	0.1µF	2
	C34	ECCF1H150J	15pF	1
	C35	ECCF1H030C	3pF	1
	C36	ECEA0JKA470	47µF, 6.3V	1
	C37	ECUV1H104ZFX	0.1µF	1
	C38	ECEA1CKA100	10µF, 16V	1
	C39	ECBA1C682MR5	0.0068µF	1
	C40	ECEA1CKA100	10µF, 16V	1
	C41	ECEA0JKA470	47µF, 6.3V	1
	C43~45	ECUV1H104ZFX	0.1µF	3
○	C47~53	ECUT1H222KBN	0.0022µF	7
	C54	ECBA1C222MR5	0.0022µF	1
	C55	ECBA1H101KB5	100pF	1
	C56	ECBA1C222MR5	0.0022µF	1

	Ref. No.	Part No.	Description	Per/Set
	C57	ECBA1H101KB5	100pF	1
	C58~60	ECUV1H104ZFX	0.1µF	3
	C61	ECBA1C682MR5	0.0068µF	1
	C62~69	ECUV1H104ZFX	0.1µF	8
○	C70	ECUT1H222KBN	0.0022µF	1
	C71	ECBA1H471KB5	470pF	1
	C74	ECUV1H104ZFX	0.1µF	1
	C75, 76	ECEA0JKA470	47µF, 6.3V	2
	C79	ECUV1H104ZFX	0.1µF	1
	C80, 81	ECSS1EF106B	10µF, 25V	2
	C82	ECBA1H101KB5	100pF	1
	C83	ECBA1H471KB5	470pF	1
	C84~87	ECUV1H104ZFX	0.1µF	4
	C88, 89	ECEA1HKN010	1µF, 50V	2
	C90~92	ECUV1H104ZFX	0.1µF	3
	C94	ECBA1H471KB5	470pF	1
	C95	ECUV1H104ZFX	0.1µF	1
	C96	ECRR1H104ZF	0.1µF	1
	C97	ECBA1H471KB5	470pF	1
	C98~107	ECUV1H104ZFX	0.1µF	10
	C108, 109	ECUV1H104ZFX	0.1µF	2
	C110	ECRR1H104ZF	0.1µF	1
	C111	ECSS1EF106B	10µF, 25V	1

JACK JACK CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
		INTEGRATED CIRCUIT		
	IC1	SVIGTLP513	Photo Coupler	1
		TRANSISTORS		
S	Q1~3	2SA1015-GR	2SA933STRS (SUB. Part)	3
		DIODES		
	D1~7	MA165TA5	Diode	7
		COILS		
	L1~5	QLQGT3T150SA	Coil	5
		JACKS		
	JK1	QJSG002AA	PEDAL IN	1
	JK2~4	SJSG1370A	MIDI (IN, OUT, THRU)	3
	JK5~8	QJJG003AA	LINE OUT, AUX IN	4
		CONNECTORS (Except for M, MC, XM, EZ areas)		
	CN1	QJTG01010AA	Connector	1
	CN2	QJTG01005AA	Connector	1
		VARIABLE RESISTOR		
	VR1	EVJ01PF25B55	500kΩ B, TUNE	1
		WIRES		
○	W1, 2	QEXG01008RA	Wire	2
		RESISTORS		
	R1, 2	ERDS2TJ103	10kΩ	2
	R3	ERDS2TJ471	470Ω	1
	R4	ERDS2TJ104	100kΩ	1
	R5~7	ERDS2TJ103	10kΩ	3
	R8, 9	ERDS2TJ101	100Ω	2
	R10	ERDS2TJ221	220Ω	1

Ref. No.		Part No.	Description	Per/Set
	R11	ERDS2TJ104	100kΩ	1
	R12, 13	ERDS2TJ101	100Ω	2
	R14	ERDS2TJ221	220Ω	1
	R15	ERDS2TJ104	100kΩ	1
	R16	ERDS2TJ221	220Ω	1
	R17, 18	ERDS2TJ102	1kΩ	2
	R19, 20	ER0S2TKF1001	1kΩ, ±1%	2
	R21, 22	ERDS2TJ102	1kΩ	2
	R23, 24	ERDS2TJ152	1.5kΩ	2
	CAPACITORS			
	C1	ECRR1H104ZF	0.1μF	1
	C2~4	ECKF1E473ZV	0.047μF	3
	C5, 6	ECCF1H221J	220pF	2
	C7	ECKF1E473ZV	0.047μF	1
	C8	ECEA0JKA470	47μF, 6.3V	1
	C9	ECEA1HKN010	1μF, 50V	1
	C10, 13, 16	ECRR1H104ZF	0.1μF	3
	C18~21	ECBA1C222MR5	0.0022μF	4

AS AMP & POWER SUPPLY CIRCUIT

Ref. No.		Part No.	Description	Per/Set
	INTEGRATED CIRCUITS			
	IC1	SVIGS4172M2M	Power Amplifier	1
	IC2	SVIGM5291P	Switching Regulator	1
	IC3	SVIGM5F7815	+15V Voltage Regulator	1
	IC4	SVIGM5F7915	−15V Voltage Regulator	1
S	IC5, 8~10	SVIGM5218L	Operational Amplifier	4
	IC11	SVIGLM1894N	Dynamic Noise Reduction	1
	TRANSISTORS			
	Q1	2SA1643	Transistor	1
S	Q4, 6, 13~20	2SA1015-GR	2SA933STRS (SUB. Part)	10
S	Q5	2SC1815GR	Transistor	1
	Q9, 12	2SA1534ARS	Transistor	2
	Q10, 11	2SC3940ARS	Transistor	2
	DIODES			
	D1, 2 ⚠	SVDGERA1502	Rectifier	2
S	D3~10 ⚠	SVDGS3V20	Rectifier	8
	D11	SVDGRK14S	Diode	1
	D12	MA2062LF	Zener, 6.2V	1
	D15, 16	MA4200	Zener, 20V	2
	D17	EK04	Diode	1
	D18, 19	MA165TA5	Diode	2
	COILS			
	L1	QLQGT1T121SA	Coil	1
	L4	QLQGT3T150SA	Coil	1
	CONNECTORS (Except for M, MC, XM, EZ areas)			
	CN2	QJTG01005AA	Connector	1
	CN3	QJTG01012AA	Connector	1
	FUSES			
	F4, 5 M ⚠ MC XM	XBA1C50NU100	5A, 125V	2
	F4, 5 ⚠ Others	XBA2C40TB0	T4A, 250V	2
	IC PROTECTORS			
○	IP1 ⚠	ICP-N38T104	IC Protector	1
	IP2, 3 ⚠	ICP-N10T104	IC Protector	2
	WIRE			
○	W1	QEXG01008RA	Wire	1
	RESISTORS			
	R1, 2	ERDS2TJ103	10kΩ	2
	R5 ⚠	ERX1ANJP4R7S	4.7Ω, 1W, Flame-Proof	1
	R6 ⚠	ERX1ANJPR22S	0.22Ω, 1W, Flame-Proof	1
	R7	ERDS2TJ101	100Ω	1
	R8	ERDS2TJ471	470Ω	1
	R9	ERDS2TJ470	47Ω	1
	R10 ⚠	ERG1ANJP221S	220Ω, 1W, Flame-Proof	1
	R11	ER0S2TKF3571	3.57kΩ, ±1%	1
	R12	ERDS2TKF1001	1kΩ, ±1%	1
	R15, 16	ERDS2TJ102	1kΩ	2
	R17	ERDS2TJ473	47kΩ	1
	R18	ERDS2TJ103	10kΩ	1
	R19	ERDS2TJ101	100Ω	1
	R20	ERDS2TJ332	3.3kΩ	1
	R21	ERDS2TJ473	47kΩ	1
	R22	ERDS2TJ681	680Ω	1
	R23	ERDS2TJ823	82kΩ	1
	R26, 27	ERDS2TJ224	220kΩ	2
	R29	ERDS2TJ220	22Ω	1
	R56, 57	ERDS2TJ472	4.7kΩ	2
	R58, 59	ERDS2TJ222	2.2kΩ	2
	R62, 63	ERDS2TJ471	470Ω	2
	R66, 67	ERDS2TJ222	2.2kΩ	1
	R70	ERDS2TJ223	22kΩ	1
	R71	ERDS2TJ103	10kΩ	1
	R72	ERDS2TJ471	470Ω	1
	R73	ERDS2TJ223	22kΩ	1
	R74	ERDS2TJ103	10kΩ	1
	R75	ERDS2TJ471	470Ω	1
	R76	ERDS2TJ273	27kΩ	1
	R77	ERDS2TJ103	10kΩ	1
	R78	ERDS2TJ471	470Ω	1
	R79 ⚠	ERD2FCVJ4R7	4.7Ω, 1/4W, Fuse Type	1
	R80	ERDS2TJ223	22kΩ	1
	R81	ERDS2TJ103	10kΩ	1
	R82	ERDS2TJ471	470Ω	1
	R83	ERDS2TJ223	22kΩ	1
	R84	ERDS2TJ103	10kΩ	1
	R85	ERDS2TJ471	470Ω	1
	R86	ERDS2TJ273	27kΩ	1
	R87	ERDS2TJ103	10kΩ	1
	R88	ERDS2TJ471	470Ω	1
	R89	ERDS2TJ472	4.7kΩ	1
	R90 ⚠	ERD2FCVJ4R7	4.7Ω, 1/4W, Fuse Type	1
	R91	ERDS2TJ472	4.7kΩ	1
	R92	ERDS2TJ103	10kΩ	1
	R94	ERDS2TJ102	1kΩ	1
	R95 ⚠	ERD2FCVG101	100Ω, 1/4W, Fuse Type	1
	R96 ⚠	ERD2FCVJ4R7	4.7Ω, 1/4W, Fuse Type	1
	R97	ERDS2TJ473	47kΩ	1
	R98	ERDS2TJ102	1kΩ	1
	R99	ERDS2TJ222	2.2kΩ	1
	R100, 101	ERDS2TJ152	1.5kΩ	2
	R102	ERDS2TJ183	18kΩ	1
	R103	ERDS2TJ103	10kΩ	1
	R105~108	ERDS2TJ102	1kΩ	4
	R109	ERDS2TJ224	220kΩ	1
	R110	ERDS2TJ472	4.7kΩ	1
	R112	ERDS2TJ473	47kΩ	1
	R113	ERDS2TJ102	1kΩ	1
	R114	ERDS2TJ222	2.2kΩ	1
	R115, 116	ERDS2TJ152	1.5kΩ	2
	R117, 118 ⚠	ERD25FVJ4R7	4.7Ω, 1/4W, Flame-Proof	2

Ref. No.	Part No.	Description	Per/Set
R119	ERDS2TJ334	330kΩ	1
R121	ERDS2TJ471	470Ω	1
R124~126	ERDS2TJ332	3.3kΩ	3
R127	ERDS2TJ331	330Ω	1
R129	ERDS2TJ471	470Ω	1
R132~134	ERDS2TJ332	3.3kΩ	3
R135	ERDS2TJ331	330Ω	1
R136, 137	ERDS2TJ102	1kΩ	2
R138	ERDS2TJ331	330Ω	1
R139	ERDS2TJ681	680Ω	1
R140	ERDS2TJ103	10kΩ	1
R141	ERDS2TJ221	220Ω	1
R142	ERDS2TJ471	470Ω	1
R143	ERDS2TJ221	220Ω	1
R145	ERDS2TJ221	220Ω	1
R146, 147	ERDS2TJ332	3.3kΩ	2
R148	ERDS2TJ683	68kΩ	1
R149	ERDS2TJ104	100kΩ	1
R150	ERDS2TJ473	47kΩ	1
R153	ERDS2TJ104	100kΩ	1
R154	ERDS2TJ473	47kΩ	1
R155	ERDS2TJ683	68kΩ	1
R158	ERDS2TJ221	220Ω	1
R160	ERDS2TJ224	220kΩ	1
R162	ERDS2TJ224	220kΩ	1
R163	ERDS2TJ220	22Ω	1
R164	ERDS2TJ183	18kΩ	1
R165	ERDS2TJ103	10kΩ	1
R166	ERDS2TJ471	470Ω	1
R170, 171	ERDS2TJ102	1kΩ	1
CAPACITORS			
C1, 2	ECEA1VU222	2200μF, 35V	2
C3, 4	ECEA1VU332	3300μF, 35V	2
C5 ⚠	ECQE1A104M6	0.1μF, 125V	1
C6	ECEA1VKG100	10μF, 35V	1
C8	ECEA0JU102	1000μF, 6.3V	1
C10	ECRR1H104ZF	0.1μF	1
C13, 14	ECEA1VKG100	10μF, 35V	2
C17	ECCF1H220J	22pF	1
C19	ECEA1CKA470	47μF, 16V	1
C34, 35	ECQV1H334JM	0.33μF	2
C36, 37	ECQB1H153JF	0.015μF	2
C38, 39	ECQB1H333JF	0.033μF	2
C40, 41	ECQV1H334JM	0.33μF	2
C42, 43	ECQB1H153JF	0.015μF	2
C44, 45	ECQB1H333JF	0.033μF	2
C46	ECQV1H154JM	0.15μF	1
C48	ECQV1H334JM	0.33μF	1
C49	ECQG1H332KZ	0.0033μF	1
C50	ECEA1HU330	33μF, 50V	1
C51	ECQV1H154JM	0.15μF	1
C52, 53	ECEA1VKG100	10μF, 35V	2
C55	ECQV1H334JM	0.33μF	1
C56	ECQG1H332KZ	0.0033μF	1
C57	ECEA1VKG100	10μF, 35V	1
C58	ECQV1H154JM	0.15μF	1
C59, 60	ECEA1VKG100	10μF, 35V	2
C61, 62	ECRR1H104ZF	0.1μF	2
C63	ECQV1H154JM	0.15μF	1
C65, 66	ECEA50Y22	22μF, 50V	2
C67, 68	ECEA50Y3R3	3.3μF, 50V	2
C70	ECEA1CKA100	10μF, 16V	1
C71	ECEA1VKG100	10μF, 35V	1
C72	ECEA1CKN470	47μF, 16V	1
C75	ECQB1H333JF	0.033μF	1
C76, 77	ECQG1H332KZ	0.0033μF	2

Ref. No.	Part No.	Description	Per/Set
C78	ECBA1H681KB5	680pF	1
C79	ECEA1HKA010	1μF, 50V	1
C82	ECQB1H333JF	0.033μF	1
C83, 84	ECQG1H332KZ	0.0033μF	2
C85	ECBA1H681KB5	680pF	1
C86	ECEA1HKA010	1μF, 50V	1
C87, 88	ECEA1CKA470	47μF, 16V	2
C89	ECRR1H104ZF	0.1μF	1
C90	ECQG1H102KZ	0.001μF	1
C91	ECQG1H472KZ	0.0047μF	1
C92	ECEA1CKA100	10μF, 16V	1
C93	ECKF1E473ZV	0.047μF	1
C94	ECEA1CKA100	10μF, 16V	1
C95	ECQG1H472KZ	0.0047μF	1
C96	ECEA1CKA100	10μF, 16V	1
C97	ECQB1H103JF	0.01μF	1
C102	ECCF1H220J	22pF	1
C104	ECRR1H104ZF	0.1μF	1

TCF TRANSFORMER & FUSE CIRCUIT

Ref. No.	Part No.	Description	Per/Set
COIL			
L1 ⚠	SLTGLF3	Line Filter	1
JACK			
JK1 ⚠	SJVD0203B	AC Inlet	1
SWITCH			
S1 EK X ⚠ XR XS XT XD	SSRG100A	Voltage Selector	1
FUSES			
F1 M MC ⚠ XM	XBA1C63NU100	6.3A, 125V	1
F1 EK X ⚠	XBA2C40TB0	T4A, 250V	1
F2, 3 XR XS ⚠ XT XD	XBA2C20TB0	T2A, 250V	2
F3 Others ⚠	XBA2C20TB0	T2A, 250V	1
CAPACITORS			
C1 ⚠	ECKCVA1472MF	4700pF, Line-Capacitor	1
C2 ⚠	ECQU2A104MN	0.1μF, 250V, Across-the Line Capacitor	1

HP HEADPHONES CIRCUIT

Ref. No.	Part No.	Description	Per/Set
COIL			
L1	QLQGT3T150SA	Coil	1
JACKS			
JK1, 2	SJJG100A	Headphone Jack	2
WIRES			
○ W1	QEXG01008RA	Wire	1
○ W2	QEUGK2H12YY	Wire	1
RESISTORS			
R1~4 ⚠	ERG1ANJP680S	68Ω, 1W, Flame-Proof	4

Ref. No.	Part No.	Description	Per/Set
CAPACITORS			
C1, 2	ECKF1E473ZV	0.047μF	2
C3	ECRR1H104ZF	0.1μF	1

CPL CONTROL PANEL LEFT CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIGM603A121	Gate Array	1
IC2, 3	HD74LS07P	Hex Buffers	2
TRANSISTORS			
Q1~4	2SA830SB	Transistor	4
DIODES			
D1~44, 49	MA165TA5	Diode	45
D50~54, 70~83, 87, 89~99, 106	LN282R	LED (Red)	32
D100	LN382G	LED (Green)	1
SWITCHES			
SW1~24	QSPG1005AA	Push Switch	24
SW25~29	SSSG1011A	Balance	5
IC PROTECTOR			
IP1 ⚠	ICP-N10T104	IC Protector	1
VARIABLE RESISTOR			
VR1	EWD06910B53G	5kΩ B, Main Volume	1
RESISTORS			
R1	ERDS2TJ184	180kΩ	1
R2	ERDS2TJ221	220Ω	1
R3	ERDS2TJ152	1.5kΩ	1
R4	ERDS2TJ102	1kΩ	1
R5~9	ERDS2TJ103	10kΩ	5
R10~20	ERDS2TJ680	68Ω	11
R30~37	ERDS2TJ103	10kΩ	8
CAPACITORS			
C1	ECEA0JKA470	47μF, 6.3V	1
C2	ECBA1H101KB5	100pF	1
C3	ECRR1H104ZF	0.1μF	1
C4	ECEA1HKA010	1μF, 50V	1
C5	ECBA1H101KB5	100pF	1
C7	ECRR1H104ZF	0.1μF	1

CPR CONTROL PANEL RIGHT CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIGM603A121	Gate Array	1
IC2~5	HD74LS07P	Hex Buffers	4
TRANSISTORS			
Q1~4	2SA830SB	Transistor	4

Ref. No.	Part No.	Description	Per/Set
DIODES			
D1~43, 45, 47~49	MA165TA5	Diode	47
D50~54, 56~77, 84, 90~103, 105, 107~109	LN282R	LED (Red)	47
D78~83, 85, 86, 88, 104	LN382G	LED (Green)	10
SWITCHES			
SW1~43, 45, 47, 48	QSPG1005AA	Push Switch	46
IC PROTECTOR			
IP1 ⚠	ICP-N10T104	IC Protector	1
RESISTORS			
R1	ERDS2TJ184	180kΩ	1
R2	ERDS2TJ221	220Ω	1
R3	ERDS2TJ152	1.5kΩ	1
R4	ERDS2TJ102	1kΩ	1
R5~9	ERDS2TJ103	10kΩ	5
R10~20	ERDS2TJ680	68Ω	11
R22	ERDS2TJ680	68Ω	1
R24	ERDS2TJ680	68Ω	1
R26	ERDS2TJ680	68Ω	1
R28, 29	ERDS2TJ680	68Ω	2
R30~37	ERDS2TJ103	10kΩ	8
R38, 39	ERDS2TJ680	68Ω	2
CAPACITORS			
C1	ECEA0JKA470	47μF, 6.3V	1
C2	ECBA1H101KB5	100pF	1
C3	ECRR1H104ZF	0.1μF	1
C4	ECEA1HKA010	1μF, 50V	1
C5	ECBA1H101KB5	100pF	1
C7, 8, 10	ECRR1H104ZF	0.1μF	3

CPSQ SEQUENCER CONTROL CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIGM603A121	Gate Array	1
IC2, 3	HD74LS07P	Hex Buffers	2
TRANSISTORS			
Q1~4	2SA830SB	Transistor	4
DIODES			
D7~49	MA165TA5	Diode	20
D54, 55, 66~78, 82~86	LN282R	LED (Red)	20
D56~65, 79, 81, 87~89	LN382G	LED (Green)	15
SWITCHES			
SW7~40	QSPG1005AA	Push Switch	19
IC PROTECTOR			
IP1 ⚠	ICP-N10T104	IC Protector	1

Ref. No.	Part No.	Description	Per/Set
RESISTORS			
R1	ERDS2TJ184	180kΩ	1
R2	ERDS2TJ221	220Ω	1
R3	ERDS2TJ152	1.5kΩ	1
R4	ERDS2TJ102	1kΩ	1
R5~9	ERDS2TJ103	10kΩ	5
R10~18	ERDS2TJ680	68Ω	9
R30~37	ERDS2TJ103	10kΩ	8
CAPACITORS			
C1	ECEA0JKA470	47μF, 6.3V	1
C2	ECBA1H101KB5	100pF	1
C3	ECRR1H104ZF	0.1μF	1
C4	ECEA1HKA010	1μF, 50V	1
C5	ECBA1H101KB5	100pF	1

FDCN FD CONNECTOR CIRCUIT

Ref. No.	Part No.	Description	Per/Set
CONNECTOR			
CN3	SJSG16SM222A	Connector	1
CAPACITORS			
C1	ECRR1H104ZF	0.1μF	1
C2	ECCF1H221J	220pF	1

FDC FD CONTROL CIRCUIT

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIGD72067C	Floppy Disk Controller	1
IC2	SVIGM74H02	Quad 2-input NOR Gates	1
IC3	SVIGM74H00	Quad 2-input NAND Gates	1
IC4	SVIGM74H14	Hex Schmitt-trigger Inverters	1
IC5	SVIGM74H04	Hex Inverters	1
OSCILLATOR			
X1	QSXG1A3200A	32MHz, Quartz Oscillator	1
COMPONENT COMBINATIONS			
Z1, 2	EXBPI8103JM	10kΩ×8	2
Z3	EXBPI8102JM	1kΩ×8	1
RESISTORS			
R1~4	ERDS2TJ472	4.7kΩ	4
R5, 6	ERDS2TJ153	15kΩ	2
R7	ERDS2TJ103	10kΩ	1
CAPACITORS			
C1, 2	ECBA1H100J	10pF	2
C6	ECEA0JKA331	330μF, 6.3V	1
C8~11	ECRR1H104ZF	0.1μF	4

MKB1 MANUAL KEYBOARD CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
	INTEGRATED CIRCUITS			
	IC1	MSM7U042016	Gate Array	1
	IC2	BR93CS46	1k bit Programmed EEPROM	1
	DIODES			
S	D1~88	MA162A	MA150IR (SUB. Part)	88
	OSCILLATOR			
	X1	SVQGA20MX040	20MHz, Ceramic Oscillator	1
	SWITCHES			
	S1~44	QMWG6006AA	Rubber Switch (8 pcs. on one)	6
	RESISTORS			
	R1	ERDS2TJ101	100Ω	1
	R2, 3	ERDS2TJ472	4.7kΩ	2
	CAPACITORS			
	C1	ECEA0JU470	47μF, 6.3V	1
	C2	ECCF1H471J	470pF	1
	C3, 4	ECCF1H220J	22pF	2
	C5	ECKF1E473ZV	0.047μF	1
	C6, 7	ECCF1H101J	100pF	2

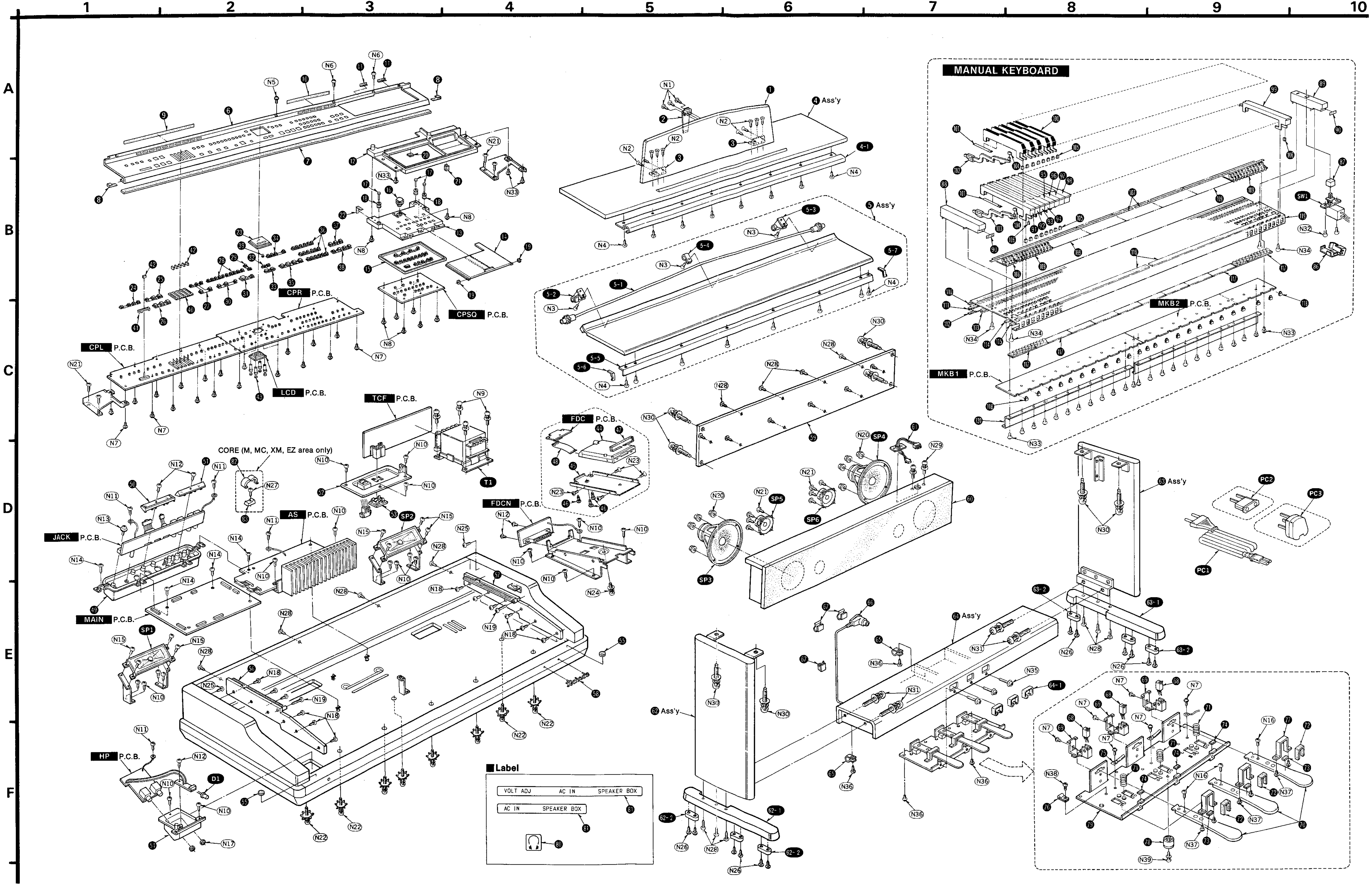
MKB2 MANUAL KEYBOARD 2 CIRCUIT

	Ref. No.	Part No.	Description	Per/Set
	DIODES			
S	D89~176	MA162A	MA150IR (SUB. Part)	88
	COMPONENT COMBINATION			
	Z1	EXBP88332JM	3.3kΩ×8	1
	SWITCHES			
	S45~88	QMWG6006AA	Rubber Switch (8 pcs. on one)	6

■ WIRING PARTS

	Ref. No.	Part No.	Description	Per/Set
○	W1	QEXGVH06030B	Connector with Wire	1
○	W2	QEXGEL06020A	Connector with Wire	1
○	W4	QEXGVH05060C	Connector with Wire	1
○	W5	QEXGVH04100B	Connector with Wire	1
○	W6	QEXGSS04105A	Connector with Wire	1
○	W7	QEXGSS05085A	Connector with Wire	1
	W8	QEXGSS06090A	Connector with Wire	1
○	W9	QEXGSS14025A	Connector with Wire	1
○	W10	QEXGSS16130A	Connector with Wire	1
	W11, 12	QEXGSS14015A	Connector with Wire	2
○	W13	QEXGSS16065A	Connector with Wire	1
○	W14	QEXGVH03065B	Connector with Wire	1
○	W15	QEXGEL06085C	Connector with Wire	1
○	W16 M MC XM EZ	QEXGSS10025A	Connector with Wire	1
○	W17 M MC XM EZ	QEXGSS05025A	Connector with Wire	1
○	W18 M MC XM EZ	QEXGSS12025A	Connector with Wire	1

CABINET PARTS LOCATION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A
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C
D
E
F
MANUAL KEYBOARD
CPL P.C.B.
CPR P.C.B.
CPSQ P.C.B.
LCD P.C.B.
TCF P.C.B.
FDC P.C.B.
FDCN P.C.B.
AS P.C.B.
JACK P.C.B.
MAIN P.C.B.
HP P.C.B.
MKB1 P.C.B.
MKB2 P.C.B.
CORE (M, MC, XM, EZ area only)
T1
SP1
SP2
SP3
SP4
SP5
SP6
SW1
PC1
PC2
PC3
D1
4 Ass'y
5 Ass'y
59
63 Ass'y
62 Ass'y
64 Ass'y
■Label
VOLT ADJ AC IN SPEAKER BOX
61
AC IN SPEAKER BOX
61
80

REPLACEMENT PARTS LIST......Cabinet and Chassis Parts

Notes:

1. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
2. ○ mark are new parts.
3. For part No. with area mark, check the area when placing an order.
4. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.

■ CABINET & CHASSIS PARTS

	Ref. No.	Part No.	Description	Per/Set
		SWITCH		
	S1 ⚠	ESB823V	Power Switch	1
		DIODE		
	D1	SEL4214RLC05	LED, Power Indicator	1
		SPEAKERS		
	SP1, 2	EAS15S09A	13×6cm, 8Ω	2
	SP3, 4	EAS16PL470A3	16cm, 8Ω	2
	SP5, 6	EAS65PH31A3	6.5cm, 8Ω	2
		TRANSFORMERS		
○	T1 M MC XM ⚠	QTPG1N010A	Power Transformer	1
○	T1 EK X XR XS XT XD ⚠	QTPG1N013A	Power Transformer	1
○	T1 Others ⚠	QTPG1N012A	Power Transformer	1
		POWER CORD & PLUG		
	PC1 XL XR ⚠	SJAG61	AC Power Cord	1
	PC1 M MC XM ⚠	SJAG62	AC Power Cord	1
	PC1 XS ⚠	QJAG001AA	AC Power Cord	1
○	PC1 EK XD ⚠	VJA0733	AC Power Cord	1
	PC1 Others ⚠	SJAG65	AC Power Cord	1
	PC2 X XT ⚠	SJP5213-1	Attachment Plug	1
	PC3 XD ⚠	SJPG1350A	Power Plug	1
		CABINET PARTS		
	1	QGAG1018AA	Music Rack	1
	2	SBLG7	Stay	1
	3	SBHG5003	Hinge	2
	4	QKQGA050AA	Top Cover Assembly	1
○	4-1	QGKG0045AA	Ornament	1
○	5	QKQGF010AA	Keyboard Cover Assembly	1
	5-1	QXQG007AA	Axletree	1
	5-2	QMRG7026AA	Holder	1
○	5-3	QMRG7026BA	Holder	1
	5-4	QWBG002AA	Holder	1
○	5-5	QGKG0075BB	Ornament	1
	5-6	QMRG7031AB	Protector	1
	5-7	QMRG7032AB	Protector	1
○	6	QGPG0014EA	Control Panel	1
	7	QMFG1035AA	Felt (Red)	1
○	8	QMFG4073AA	Felt	2
	9	QMFG4040AA	Felt	1
	10	QMFG4041AA	Felt	1
	11	QMFG4032AA	Felt	2
○	12	QGPG0015AG	Subpanel Frame	1
○	13	QGPG0016AQ	Subpanel	1
○	14	QGPG0017BD	Subpanel Cover	1
○	15	QGUG1076AB	Button Assembly	1
	16	RDG5782ZB	Gear	1
	17	RMS0123	Pin	3
	18	QMRG7013AA	Roller	3
	19	QMRG7012AA	Roller	2
	20	QMFG4033AA	Felt	1
	21	QMFG1026AA	Felt	1
	22	QMFG4032AA	Felt	1
○	23	QKWG006AA	LCD Panel	1
○	24	QGUG1143AA	Button	1
○	25	QGUG1144AA	Button	1
○	26	QGUG1145AA	Button	1
○	27	QGUG1146AA	Button	1
○	28	QGUG1147AA	Button	2
○	29	QGUG1148AA	Button	1
○	30	QGUG1149AA	Button	1
○	31	QGUG1150AA	Button	1
○	32	QGUG1151AA	Button	1
○	33	QGUG1152AA	Button	1
○	34	QGUG1153AA	Button	1
○	35	QGUG1154AA	Button	1
○	36	QGUG1155AA	Button	3
○	37	QGUG1156AA	Button	1
○	38	QGUG1157AA	Button	1
○	39	QGUG1158AA	Button	1
○	40	QMRG7034AA	Ornament	1
	41	SGEG260A	Ornament for Sliding Volume	1
	42	SBNG7050C	Knob	6
○	43	QHQG001AA	Latch	4
	44	EME213DV	Digital Disk Drive Unit	1
○	45	SUVG1283A	Cover	1
	46	SHRG9850A	P.C.B. Holder	3
○	47	QMFG1082AA	Felt	1
	48	QEUGR0W10A	Flat Cable	1
○	49	QGKG0076AF	External Jack Case	1
	50	QMRG7029AB	Bracket	1
	51	QMRG7028AB	Bracket	1
	52 EK X XR XS XT XD	QGKG0079AA	AC Jack Panel	1
	52 Others	QGKG0079BA	AC Jack Panel	1
	53 XL XR ⚠	SJS9334A	AC Inlet Cover	1
	53 Others ⚠	SJS9231A	AC Inlet Cover	1
	54	QGKG0080AA	Headphone Jack Case	1
	55	QMGG019AA	Rubber Cushion	2
○	56	QKSGG008AA	Keyboard Cover Guide, Left	1
○	57	QKSGG009AA	Keyboard Cover Guide, Right	1
	58	SGBG160B	Badge	1
○	59	QKUG1021BAK	Rear Board	1
○	60	QYKG103BAK	Speaker Box	1
	61	QEXGEL06020A	Connector with Wire	1
○	62	QKQGB196AA	Left Plank Assembly	1

Ref. No.	Part No.	Description	Per/Set
62-1	QKSGB002BA	Leg	1
62-2	SHRG2130B	Foot	3
○ 63	QKQGB197AA	Right Plank Assembly	1
63-1	QKSGB002BA	Leg	1
63-2	SHRG2130B	Foot	3
○ 64	QKQGM036AA	Pedal Box Assembly	1
64-1	QGKG0036AA	Ornament	3
65	SHRG1230A	Cord Clamper	2
66	QJLG002AB	Pedal Cord	1
67	SHRG9620A	Cord Clamper	3
68	SRDSMLS-2	Switch	3
69	QMWG8005AB	Switch Cover	3
70	STBG3119A	Pedal Arm	3
71	SUSG441A	Spring	3
72	SHSG2750A	Felt	3
73	SHSG2770A	Felt	3
74	SHSG2790A	Felt	3
75	SUWG219	Binder	2
76	SHRG1130A	Cord Clamper	1
77	STBG4090A	Arm Guide	3
78	SKLG160A	Foot	1
79	QMKG001AA	Pedal Chassis	1
80	SGKG3040B	Label (Headphone)	1
○ 81 EK X XR XS XT XD	QQLG054AA	AC IN Label	1
○ 81 Others	QQLG053AA	AC IN Label	1
82 M MC XM EZ	QLZG003A	Core	7
83 M MC XM EZ	SHRG1270A	Mounting Base	7

MANUAL KEYBOARD

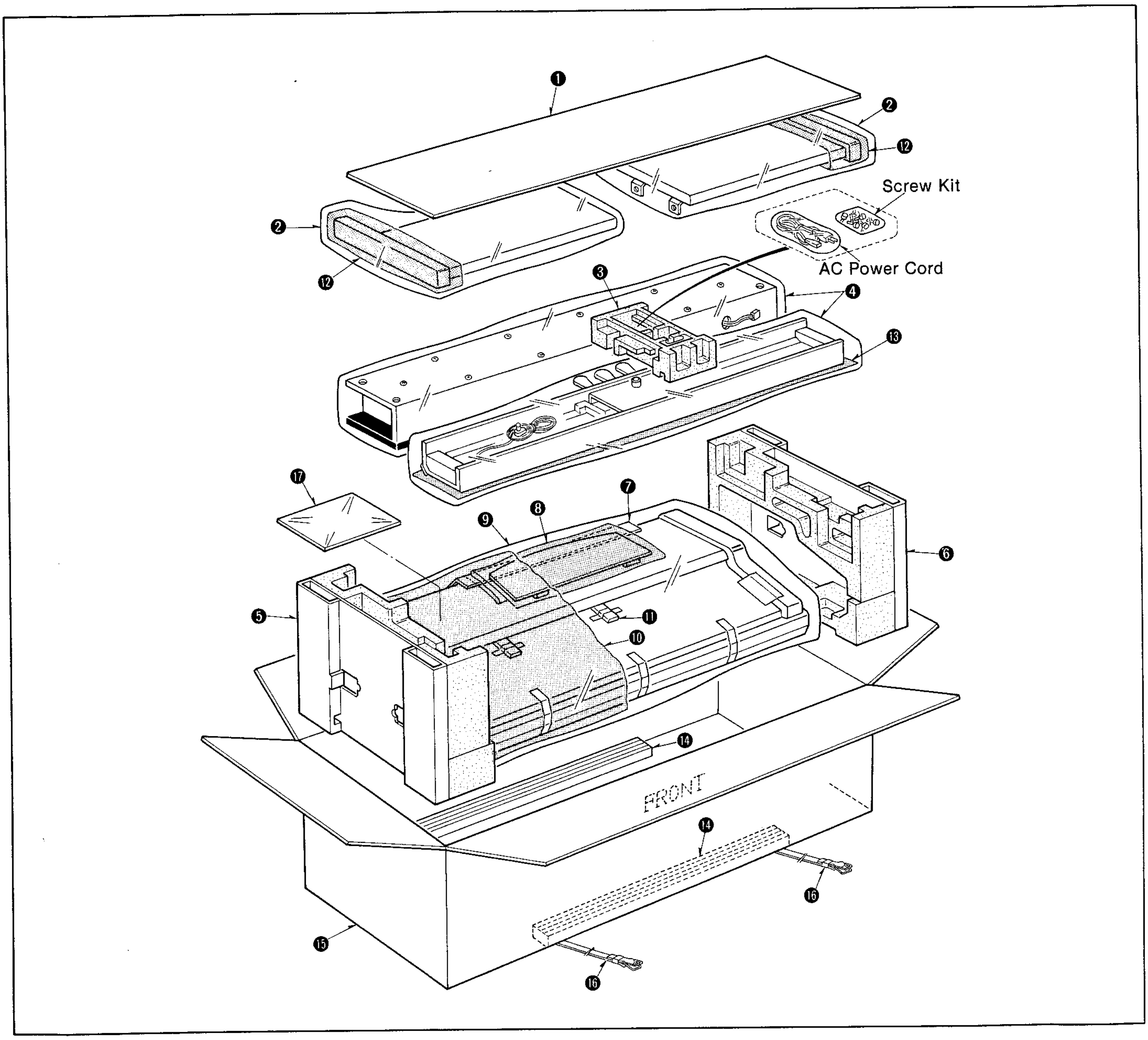
Ref. No.	Part No.	Description	Per/Set
86	SHRG8390A	Cover, Power SW.	1
87	QGUG1040AA	Button, Power Switch	1
88	QGPG0042AB	End Cover Panel, Left	1
89	QGPG0041AB	End Cover Panel, Right	1
90	SHSG3690A	Felt	2
91	STBGA1050A	White Key (First Octave A Key)	1
92	STBGA1060A	White Key (B Key)	8
93	STBGA1070A	White Key (C Key)	7
94	STBGA1080A	White Key (D Key)	7
95	STBGA1090A	White Key (E Key)	7
96	STBGA1100A	White Key (F Key)	7
97	STBGA1110A	White Key (G Key)	7
98	STBGA1120A	White Key (A Key)	7
99	STBGA1130A	White Key (Top Octave C Key)	1
100	STBG2920A	Black Key	36
○ 101	SUSG534A	Spring	88
102	QMWG8014AA	Hammer (Black Key)	36
103	QMWG8013AA	Hammer (White Key)	52
104	SHGG9121A	Rubber Cap (Hammer)	88
105	SHRG9900B	Key Guide Rubber	88
106	SHSG5910A	Felt	52
107	QMFG4067AA	Felt	2
108	QMWG8004CA	Fulcrum (4 pcs. on one)	1
109	QMWG8003GA	Fulcrum (12 pcs. on one)	7
110	SHRGA9080A	Sponge	2
111	QMFG1073AA	Felt	2
112	SHSG3461A	Felt	1
113	QMFG1074CA	Felt	2
114	QMFG1061AA	Felt	2
115	QMFG1060AA	Felt	2
116	SHSG3451A	Felt	2
117	QMWG6006AA	Rubber Switch (8 pcs. on one)	11

Ref. No.	Part No.	Description	Per/Set
118	SHRG9751A	P.C.B. Holder	24
119	STBG6216A	Chassis	1
120	SUWG3152A	Angle	2

SCREWS & WASHERS

Ref. No.	Part No.	Description	Per/Set
N1	XTB3+10AFVC	Screw	3
N2	XTS3+10AFVC	Screw	10
N3	XTB4+10B	Screw	3
N4	XTT4+10A	Screw	16
N5	XTW3+10JFZ	Screw	1
N6	XTV3+12GFZ	Screw	2
N7	XTW3+8T	Screw	28
N8	XTV3+12G	Screw	8
N9	XYN4+F20	Screw with Washer	4
N10	XTB35+12A	Screw	19
N11	SNEG2660A	Screw	4
N12	XTW3+10Q	Screw	5
N13	XTWSG2	Screw with Washer	1
N14	XTT4+25A	Screw	4
N15	XTW3+8J	Screw	8
N16	XSN4+6	Screw	3
N17	XNS12FZ	Nut	2
N18	XTB35+16A	Screw	12
N19	XTN4+50AFZ	Screw	2
N20	SNE499-1	Nut	8
N21	XTT4+12A	Screw	12
N22	QHDG006AA	Screw	8
N23	XSS3+6FZ	Screw	4
N24	XYN4+F10	Screw with Washer	1
N25	XTB35+20A	Screw	2
N26	XTW3+16JFZ	Screw	12
N27	XTB3+12A	Screw	7
N28	XTT4+25AFVC	Screw	20
N29	QHDG004AA	Screw	2
N30	QHDG016AA	Screw with Washer	8
N31	XYN6+F30FZ	Screw with Washer	4
N32	XTV3+10C	Screw	2
N33	XTW3+10T	Screw	27
N34	XTB4+12A	Screw	4
N35	XYN4+F16FZ	Screw with Washer	3
N36	XTB35+14A	Screw	4
N37	XTW3+8E	Screw	6
N38	XTB3+6C	Screw	1
N39	XYN4+C25	Screw with Washer	1

PACKING



PACKING PARTS

Ref. No.	Part No.	Description	Per/Set
○ 1	QPGG0208AA	Cardboard	1
2	QPFG014AB	Polyethylene Bag	2
○ 3	QPNG0334AA	Pad	1
4	QPFG026AA	Polyethylene Bag	2
○ 5	QPNG0335AA	Pad, Left	1
○ 6	QPNG0337AA	Pad, Right	1
○ 7	QPNG0347AA	Cardboard	1
8	SPHG2240A	Protection Sheet	1
9	SPHG2200A	Polyethylene Bag	1
10	QPFG015AA	Protection Sheet	1
11	QPHG019AA	Spacer	2
12	SPHG1730A	Protection Sheet	2
13	QPHG020AA	Protection Sheet	1
14	QPGG0165AA	Pad	2
○ 15	QPGG0207AA	Carton	1
16	SPSG40A	Band	2

Ref. No.	Part No.	Description	Per/Set
INSTRUCTION BOOK			
○ 17 M	QQFGPR370CA	Instruction Book	1
○ 17 EN	QQFGPR370AA	Instruction Book	1
○ 17 MC	QQFGPR370DA	Instruction Book	1
○ 17 EZ EA	QQFGPR370EA	Instruction Book	1
○ 17 EF	QQFGPR370FA	Instruction Book	1
○ 17 EW	QQFGPR370GA	Instruction Book	1
○ 17 EH	QQFGPR370HA	Instruction Book	1
○ 17 X	QQFGPR370JA	Instruction Book	1
○ 17 EK XL XR XS XD	QQFGPR370KA	Instruction Book	1
○ 17 EP XM	QQFGPR370LA	Instruction Book	1
○ 17 XT	QQFGPR370MA	Instruction Book	1